

## Aikman, Ltd., Looks at World Nitrogen Situation

### London Firm Sees Optimistic Picture Despite Overproduction

LONDON—Although production continues to exceed consumption, the situation in the world nitrogen market is not so pessimistic as statistics might indicate, was the opinion of Aikman, Ltd., London broker, in its annual year-end report on the nitrogen industry.

Aikman feels if the necessary co-operation among producers takes place, the temporary estimated nitrogen surplus should not "unduly disturb the market."

Nitrogen stocks in Europe at the end of June were estimated at under 300,000 tons or 6% of the production, which is not an alarming figure, Aikman says. In the U.S. and Canada, the next largest producing markets, stocks were normal.

Both in the U.S. and Europe, the largest producers have tended to reduce production because of low prices, Aikman said, and the trend may continue in 1959. It is possible that the estimated nitrogen surplus (Aikman estimates 595,000 tons in 1958-59) may be considerably less than present figures indicate.

The London firm feels that at present in the U.S. producers are probably only working to about 75% of capacity and in Germany, France, Belgium and Italy, the largest pro-

(Turn to AIKMAN REPORT, page 8)

## October Super Output Down From Year Ago

WASHINGTON—Production of superphosphate and other phosphatic fertilizers during October totaled 208,373 tons, compared with 218,245 tons in October, 1957, the Bureau of the Census has reported. October shipments amounted to 155,458 tons, compared with 161,955 in the previous October. Stocks on hand at the end of last October amounted to 320,704 tons, down from 342,657 tons a year earlier.

## Fertilizers and Improvement Of Nutritional Value of Food

By VINCENT SAUCHELLI  
Chemical Technologist  
National Plant Food Institute

Fertilizers have been discussed as an aid to the maintenance of soil fertility, and as a means by which the level of soil fertility is raised sufficiently to permit better varieties of crops to be grown profitably in newer and more productive systems of agriculture. They have also been described as playing an essential role in assuring more and cheaper food and

## Central Farmers Ship First Carload Of Rock Phosphate

CHICAGO—Central Farmers Fertilizer Co. of Chicago shipped the first carload of rock phosphate from its Idaho phosphate works Dec. 19, according to an announcement made by Jos. J. Lanter, president of the company. The car was consigned to the Farmers Chemical Co., Joplin, Mo. Farmers Chemical will process the rock to provide the phosphate for its ammonium phosphates.

Avery L. Stutts, manager of the Idaho phosphate works of Central Farmers, said the car was loaded and released to the Union Pacific Railroad at 1 p.m. on Dec. 19. This was the first outbound shipment of any product from the Georgetown plant.

Central Farmers Fertilizer Co. is an inter-regional agricultural co-operative producing and distributing the basic fertilizer materials needed by the 22 regional agricultural co-operatives providing fertilizer service to farmers in the Middle-West and Pacific Northwest. The 16 million dollar phosphate works being constructed in Georgetown Canyon will be the organization's principal source of phosphate.

## 1958 Crop Output Establishes Record On Smallest Planted Acreage in 40 Years

WASHINGTON—American farmers have produced in 1958 an all-time record output of crops from the smallest planted acreage in 40 years.

This was reported last week by the U.S. Department of Agriculture in its annual crop summary, which said record high yields per acre brought about total production which exceeds the previous record by 11%.

New yield-per-acre records were set by corn, wheat, oats, soybeans, barley, rye, sorghum grain and silage, rice, cotton, hay, peanuts, potatoes, sweet potatoes and tobacco.

Production totals, even though held down to some extent by below-average acreages of most crops, rose far beyond other big crop years. The year was the biggest of record in production of wheat, corn, soybeans,

raw materials for industry. Fertilizers are all that, indeed; but I believe they also play a vital part in maintaining and improving the nutritional value of food. What follows will discuss briefly this phase.

In the fertilizer industry three chemical elements dominate in the purchase, manufacture and sales functions; to wit, nitrogen, phosphorus and potassium. Materials furnishing these elements in various chemi-

(Turn to DR. SAUCHELLI, page 4)

## 1957-58 Fertilizer Tonnage Down, but Use of Primary Plant Nutrients Shows Gain

WASHINGTON—Consumption of fertilizers in the U.S. and territories of Hawaii and Puerto Rico during the year ended last June 30 totaled 22,358,000 tons, a decrease of 351,000 tons or 1.5% from that used in the preceding year, according to preliminary report released last week by the U.S. Department of Agriculture.

However, quantity of primary nutrients in 1957-58 amounted to 6,465,000 tons for a gain of 88,000 tons or 1.4% over the total in 1956-57.

The report was prepared by Walter Scholl, Marion M. Davis, Anna W. Woodard and Esther I. Fox, Fertilizer Investigations Research Branch, Soil and Water Conservation Research Division, Agricultural Research Service, USDA at Beltsville, Md.

Consumption of mixed fertilizers

in 1957-58 amounted to 14,252,000 tons—a decrease of 451,000 tons or 3.1%, while use of materials for direct application totaled 8,106,000 tons, an increase of 100,000 tons or 1.2%. Included in the materials are 7,155,000 tons of products containing one or more of the primary plant nutrients (N, available P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O), 940,000 tons of secondary and trace nutrient materials and 11,000 tons not classified.

The use of materials containing primary nutrients increased 92,000 tons (1.3%) and secondary and trace nutrient materials decreased 3,000 tons (0.3%) from the quantities in 1956-57.

The consumption of all fertilizers increased in 26 areas and decreased in 23 areas. While most states in the northeastern, north central and western half of the continent used more fertilizers, all states in the southeast and most of those in the south central part used less. More than one half of the decrease in consumption of fertilizers was due to the decrease in the South Atlantic and east south central regions and the territories.

The consumption of mixed fertilizers increased 160,000 tons in 25 areas and decreased 611,000 tons in 26 areas. Areas in which the principal increases and decreases occurred followed closely those areas having corresponding changes in consumption of all fertilizers.

Fifteen grades represented 64% of the tonnage of mixed fertilizers consumed on the continent in 1957-58. Of these, 14 also were the grades used in largest tonnage in 1956-57 (grade 3-9-6 having been replaced by grade 5-10-15).

Although the tonnage of these individual grades changed, the combined grades changed, the com-

(Turn to CONSUMPTION, page 30)

## Approval to Buy Lignite Given Nitrogen Firm

BISMARCK, N.D.—North Dakota Nitrogen, Inc. has been given the approval to purchase government lignite piles at Garrison, N.D., according to Lynn W. Pine, Garrison district engineer.

The firm now is entering final negotiations before constructing a plant which would utilize lignite as one of the raw materials in the production of synthetic nitrogenous fertilizers. Earlier, the company said it would erect a \$15 million plant if the lignite could be secured. (Croplife, page 1, Nov. 3.)

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## M. D. Sanders Named ACS Division Chairman

NEW YORK—M. D. Sanders, director of research and development of Swift & Co.'s agricultural chemical division, Chicago, has been elected chairman of the American Chemical Society's division of fertilizer and soil

chemistry for 1959. He succeeds Dr. Kenneth G. Clark of the U.S. Department of Agriculture, Beltsville, Md.

Travis P. Hignett of the Tennessee Valley Authority, Wilson Dam, Ala., was chosen chairman-elect of the ACS division. John O. Hardesty, also of USDA, Beltsville, is the new secretary-treasurer.

Mr. Sanders has carried out re-

search on the formulation of fertilizers and pesticide compounds. He received a B.S. degree from the University of Georgia in 1924. He joined Swift & Co. in 1925 as a research chemist and was named head of the chemical engineering division, head chemist, and director of research of the plant food division before he was named to his present position.

## New Lysimeter Project Started By Californians

SAN MARINO, CAL.—Broad fertilizer research is taking a step forward under the auspices of the University of California, Citrus Experiment Station, Riverside, according to the California Fertilizer Assn.

Under the direction of Dr. Parker F. Pratt, department of soils and plant nutrition, a new lysimeter project has been placed in operation which is hoped to give information on what happens to plant nutrients in a given soil under irrigated crop production for many years.

The project consists of 24 tanks approximately 5 ft. in diameter and 6 ft. deep which have fiberglass liners inside a metal shell, in order to insure against contamination. Last year the tanks were filled with four different soil types and then allowed to leach off excess salts under the winter rains. This summer 30 gal. tanks were connected to collect all future leachate water, tensionmeters installed to measure soil moisture, a high steel fence erected around the plot for rodent control and recently Dr. Pratt has planted a winter crop of swiss chard.

All the tanks have been fertilized with uniform phosphate and nitrogen applications, employing three different sources of nitrogen; one residually acid, one residually basic and one neutral in character. With three nitrogen sources on four different soil types and two replications of each, all 24 tanks are thus utilized. By analyzing and measuring all irrigation water that is applied as well as the fertilizers, and then analyzing the harvest and any leachate that occurs, Dr. Pratt and his co-workers feel they will be able to determine the net change in plant nutrients from year to year. Although this is designed to be a long term project over many years, they hope to accelerate the program as much as possible through double cropping.

Since they want to know the answers on minor plant food elements as well as on the major ones, these scientists plan to analyze all forage and leachate samples for all 16 or 18 elements essential for plant growth.

The association's soil improvement committee was one of the contributors to the lysimeter fund and in addition influenced other subscriptions from private firms in the industry in order to finance this \$13,000 project.

## Bioferm, Stauffer To Field Test New Microbial Insecticide

WASCO, CAL.—Thuricide, the first of what may be a series of microbial insecticides, will be extensively field tested this season it was reported here by Bioferm Corp. The California firm has already established facilities to produce the "living insecticide" on a large scale.

Bioferm has effected an arrangement with Stauffer Chemical Co. whereby the technical staffs of the two firms will jointly continue the development of the product. Stauffer will handle all marketing of Thuricide both in the U.S. and abroad.

Thuricide is not a chemical compound. It is a "living insecticide," composed of microorganisms which when eaten by certain insects kill the pests. This insecticide is, however, harmless to humans, warm blooded animals and fish. Recently the U.S. Food and Drug Administration granted a temporary exemption from tolerance for Thuricide for application on a wide range of food and forage crops. The U.S. Department of Agriculture has granted an experimental permit for shipment and field testing of this microbial insecticide.



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## DR. SAUCHELLI

(Continued from page 1)

cal combinations are therefore grouped as fertilizer raw materials. The plant nutrients in these materials are present in different degrees of stability and availability.

It is often necessary to subject them to mechanical and chemical treatment in order to make the nutrients available to plant life. This is especially true of materials containing phosphorus and organic nitrogen. Sulfuric acid is the chemical reagent most commonly used for this purpose and hence sulfur is justly classed as a fertilizer raw material.

Moreover, sulfur is an important plant nutrient as essential in the building up of the protein molecule as are phosphorus and nitrogen—a fact which is not commonly emphasized sufficiently.

Green plants are the primary source of nutrition for man and beast, and they are derived almost entirely from inorganic matter. All the essential chemical elements for growth and reproduction in plants are derived from soil, air and water—some 16 elements in all.

The minerals essential to life may be divided into two classes: the major elements needed in relatively large amounts and the minor or trace elements needed in small amounts. For most living organisms the major elements include nitrogen, phosphorus, potassium, magnesium, calcium and sulfur. Animals need in addition sodium and chlorine and probably plants require these as well.

The trace elements include iron, zinc, copper, manganese. Molybdenum, boron and vanadium are also required by plants and iodine, fluorine, cobalt and probably molybdenum are needed by animals. The fact that trace elements are needed in very small amounts does not mean they are less important to life than the major elements.

This brief introduction to plant nutrients may serve to set the background for the following comments.

Now, the question is, can fertilizers influence the nutritional values of crops? The effect of fertilizers on the chemical composition and nutritional value of plants has been investigated at many of our agricultural experiment stations. The results of these studies have not always been in close agreement due to, in many instances, the wide variations in the climate and the mineral content of the soils in different areas of the country.

Climatic factors, that is, rainfall, humidity, sunshine and soil moisture, decisively influence the chemical composition of a crop and very often cause a greater variation than does the presence or deficiency of plant nutritive elements.

Despite the many difficulties met with in the attempts to answer the question precisely, it may be affirmed that fertilizers can and do favor the nutritional value of food crops.

In support of this it may be proper to quote authorities recognized as competent in this field:

Dr. L. A. Maynard: "Soil factors certainly influence the content in our food crops of the minerals which are needed in animal and human nutrition. The importance of the soil in relation to mineral deficiency troubles in grazing animals, notably phosphorus deficiency, is well known. Recent studies have uncovered widespread areas of cobalt deficiency in the U.S. and indicated that trouble caused by lack of manganese, copper and perhaps other trace elements occurs as well."

Rothamsted (England) Agricultural Experiment Station: Evidence at this famous research station collected over many years of continuous

pilot-testing shows these averages for protein increases per acre from the use of 100 lb. sulfate of ammonia: barley, 23 lb. of extra protein; oats, 21 lb.; wheat, 27 lb.

Emil Truog (Wisconsin Agricultural Experiment Station): "Addition of phosphate and potash fertilizers to Wisconsin soils has in many cases improved the quality or nutritive value of the crops produced. About 20 years ago dairy cattle in several areas of northeastern Wisconsin were suffering from a so-called Pica disease caused by an inadequate content of phosphorus in the feed. This condition has now been corrected through the addition of superphosphate to the soils which greatly increased the phosphorus content of the forage. In some cases the phosphorus content was nearly doubled.

... Numerous examples could be given from Wisconsin in which the application of one chemical fertilizer or a combination of several has corrected soil deficiencies so that normal vegetables of high-food value could be produced."

Dr. K. C. Beeson (U.S. Nutrition Laboratory, Cornell): "Insofar as it is possible to measure nutritive value by laboratory techniques it can be stated that the soil exerts a major influence on the mineral nutrient content of the crop. Fertilizers make possible a wider choice of those crops of high nutritive value that can be grown on any soil or in any climatic region."

Dr. Firman E. Bear: "Fertilizers represent one of the most remarkable contributions to the needs of man that industry has ever made. They stand between us and any possible shortage of food for centuries to come. Rightly used they produce the best of food."

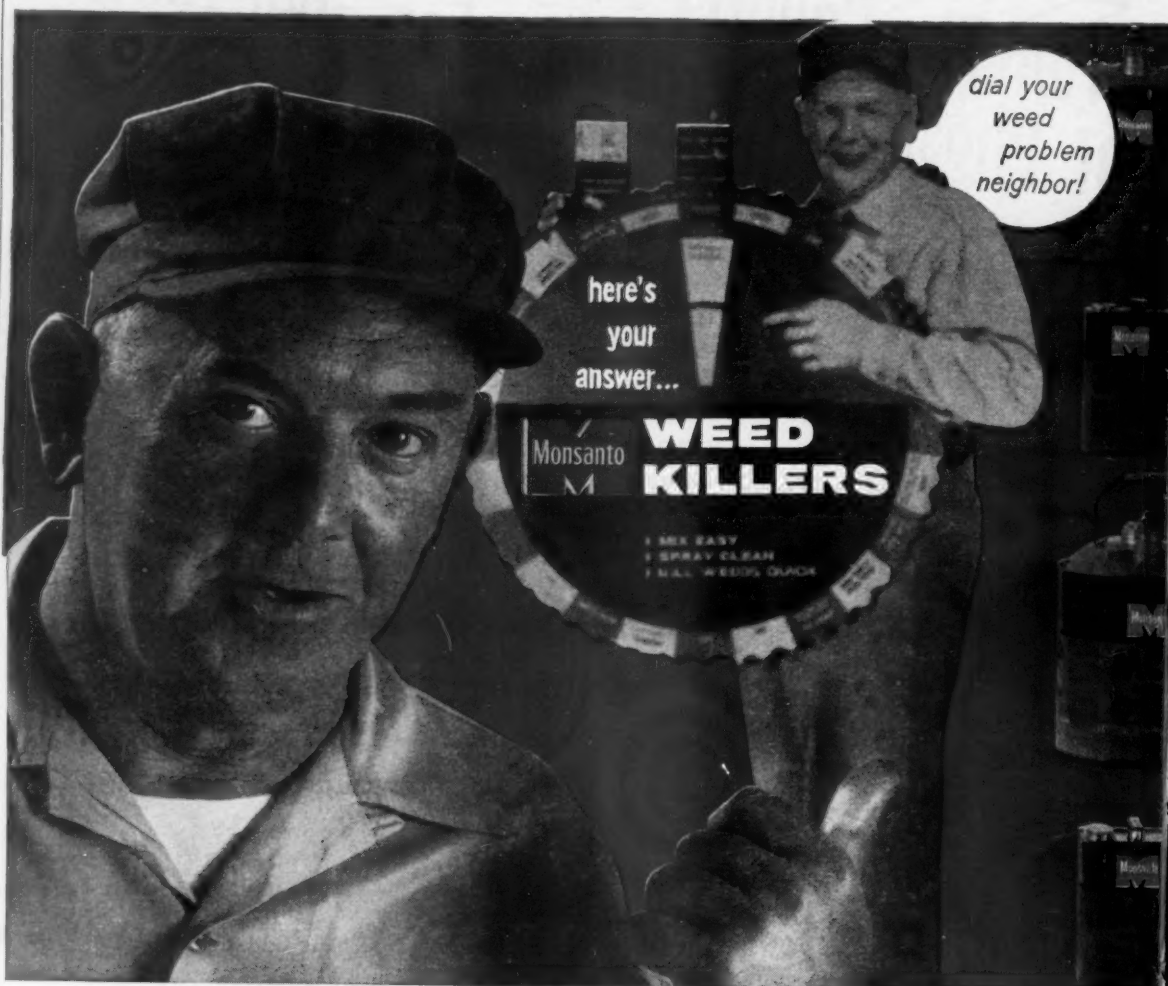
The fertilizer industry serves a ba-

sic need in our economy in the production of food and feed of high nutritive value. In this sense it can be said that this industry contributes to the maintenance and improvement of the health and general well-being of the nation.

### New York Plant Adds Larger Limestone Grinder

WATERTOWN, N.Y.—The local plant of the General Crushed Stone Co. is replacing a machine which will make the production of agricultural ground limestone more efficient, it has been announced.

Two smaller machines which have been grinding the limestone for agricultural use on farms of the North Country are being replaced by one larger machine, according to John P. Cox, plant superintendent. The larger machine will produce slightly more limestone than the previously used machines and at a greater savings in production, the company said.



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## Pesticide Residues In Milk, Meat Subject Of Fall Symposium

NEW YORK—"Pesticide Chemical Residues in Milk and Meat," a symposium sponsored by the pesticides subdivision of the American Chemical Society's division of agricultural and food chemistry, will be on the program of the September meeting of the Society in Atlantic City, N.J.

Louis Lykken, chairman designate of the pesticides subdivision, said the symposium's title and scope were intentionally broad in order to include invited and proffered papers dealing with all facets of the subject.

In recent years, he said, attention has been focused on pesticide residues in food and feed by the administration of the Miller Amendment to the Federal Food, Drug and Cosmetic Act, and by tolerances that have been

established for a few pesticide chemicals in meat or fat of meat.

Dr. J. F. Treon, of the chemical research department of Atlas Powder Co., is organizing the symposium and will handle all of the details regarding it.

The Society is soliciting papers to be submitted for the symposium. The deadlines for the papers are: title and author—June 1; 200-word abstract—June 15; and complete papers—one month prior to the meeting.

The Society will reserve first publication rights for any paper and at least one author is expected to be a society member, Mr. Lykken said.

The pesticides subdivision also plans to have one or more sessions at the spring and fall Society meetings, for presentation of papers of general interest.

The deadline for receipt of abstracts of papers intended for fall is June 15, Mr. Lykken said, and in the case of the April meeting, Jan. 5.

## Sulfur Output

WASHINGTON—The domestic sulfur industry produced 347,838 long tons of native sulfur and 53,260 tons of recovered sulfur (of a purity of 97% or better) during October, reported the Bureau of Mines, U.S. Department of the Interior. Producers' stocks of native sulfur decreased slightly from the previous month, and at the end of October totaled 4,529,737 tons.

## FORMER DOW DIRECTOR DIES

MIDLAND, MICH.—Funeral services for Dr. William Reed Veazey, 75, retired director of The Dow Chemical Co., were held in New Wilmington, Pa., Dec. 23, with burial in that city. Dr. Veazey died Dec. 20 at Youngstown, Ohio, where he had lived for more than two years. Long identified with Dow's research and administrative activities, he retired in 1953 following 37 years of service.

## TVA Reports on 1958 Fertilizer Output, Distribution

KNOXVILLE, TENN.—About 242,000 tons of phosphate and nitrogen fertilizers were produced in the Tennessee Valley Authority demonstration-scale plants at Muscle Shoals and about the same amount was distributed for use in educational programs in three-quarters of the states of the nation during 1958, said the TVA board in a report to President Eisenhower recently.

Near the end of the year, the report went on, production of 48% concentrated superphosphate, the first material which TVA made in its electric furnace research and demonstration, was discontinued. About 23,800 tons were produced in 1958. Industry production has now reached 1,700,000 tons annually. About 6,800 tons of more highly concentrated superphosphate, containing 54-55%  $P_2O_5$ , was produced by use of TVA-developed superphosphoric acid. Several phosphorus producers have made the super acid experimentally, a Canadian firm is in production, and a western fertilizer company is installing facilities to produce it.

More than 3,600 farmers in 29 states participated in the farm test-demonstration program conducted co-operatively with the state agricultural extension services, the report noted. Nevada entered the program for the first time. About 10,000 tons of TVA fertilizers were used by the test-demonstrators. Fifty-three wholesale cooperatives, and 18 industry firms participated in the distributor demonstration program. They distributed about 233,000 tons of fertilizers for uses recommended by state agricultural colleges but not generally known or adopted by farmers, TVA said. Participants in the program operate in 31 states.

For a short time at the beginning of the year, TVA continued to operate the phosphate development works at Muscle Shoals for the Army Chemicals Corps. The plant, which produces an ingredient of nerve gas, was then placed in layaway status, the report concluded.

## Farmers Changing Fertilizer Concepts

COLUMBUS—Farmers are changing their concepts on liming and fertilizing soils as they aim for higher acre yields, according to O. L. Musgrave, Ohio State University extension agronomist.

Many outstanding farmers, Mr. Musgrave says, now are thinking in terms of annual acre productions of 100 bu. of corn or oats, 40 to 50 bu. of wheat or soybeans, 500 bu. of potatoes, 5 tons of alfalfa, 20 tons of tomatoes or sugar beets, 10,000 lb. of milk and 400 lb. of beef.

High yielding crops require large amounts of plant nutrients, which must be supplied, in proper balance, from the soil, commercial fertilizers or other sources, Mr. Musgrave points out. Acre yields of 100 lb. of corn, 40 bu. of wheat, 35 bu. of soybeans or 4 tons of hay, would remove approximately 30 lb. of phosphate and 50 lb. of potash per acre when careful residue management is practiced. The amount of nitrogen needed for crops depends largely on the rotation used, texture and organic matter content of the soil. The agronomist suggests about 30 lb. an acre of nitrogen plowed down for corn if the crop follows a legume, or 90 lb. in instances where corn does not follow a legume. These rates would apply to soils with low organic matter content.

Mr. Musgrave says the starting point toward increasing acre yields or improving crop production efficiency is to lime normally acid soils.



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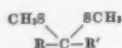
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## Industry Patents and Trademarks

2,864,738

**Fungicidal Compositions Comprising Sulfurized Mercaptols.** Patent issued Dec. 16, 1958, to Carleton B. Scott, Pomona, Cal., assignor by mesne assignments to Collier Carbon and Chemical Corp. A fungicidal composition comprising an inert fungicidal carrier material and, as the essential fungitoxic ingredient, a sulfurized mercaptol obtained by heating a dimethyl dialkyl ketone mercaptol of the formula:



wherein R and R' each represents an alkyl radical, with elemental sulfur at a temperature between about 100° C. and about 250° C. for a period of time between about 0.5 and about 12 hours, between about one and about

ten atomic weights of sulfur being employed per molecular weight of said dimethyl dialkyl ketone mercaptol and said conditions of time and temperature being sufficient to effect the formation of a sulfurized mercaptol product containing from one to an average of ten atoms of sulfur per molecule of said dimethyl dialkyl ketone mercaptol.

2,864,739

**Pesticidal Compositions Comprising Sulfurized Mercaptols.** Patent issued Dec. 16, 1958, to Carleton B. Scott, Pomona, and Irving D. Webb, Yorba Linda, Cal., assignors by mesne assignments to Collier Carbon and Chemical Corp. A fungicidal and nematocidal composition comprising an inert pesticidal carrier material and, as the essential active ingredient, a sulfurized mercaptol obtained by

heating a dimethyl mercaptol of the formula:



wherein R represents a monovalent substituent selected from the class consisting of aryl radicals and alkyl radicals containing from 1 to about 22 carbon atoms, with elemental sulfur at a temperature between about 100° C. and about 250° C. for a period of time between about 0.5 and about 12 hours, at least one atomic weight of sulfur being employed per molecular weight of said dimethyl mercaptol and said conditions of time and temperature being sufficient to effect the formation of a sulfurized mercaptol product containing from 1 to an average of 10 atoms of sulfur per molecule of said dimethyl mercaptol.

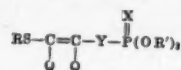
2,864,681

**Plant Growth Stimulation.** Patent issued Dec. 16, 1958, to Louis G.

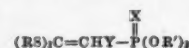
Nickell, Brooklyn, N.Y., assignor to Chas. Pfizer & Co., Inc., Brooklyn. A process for stimulating the germination of seeds which comprises contacting said seeds with a composition containing between about 0.1 and 50 ppm. of isoniazid and a carrier therefor.

2,864,741

**Di (Alkylmercapto) Substituted Vinyl, Dialkyl Phosphate and Thiophosphate Insecticides.** Patent issued Dec. 16, 1958, to William R. Diveley, Newark, Del., assignor to Hercules Powder Co., Wilmington, Del. A compound of the formula



in which R and R' represent lower alkyl radicals, X and Y are selected from the group consisting of oxygen and sulfur, and one Q is SR and the other is H. An insecticide composition comprising a compound of claim 1 and an insecticide adjuvant as a carrier therefor. The method of preparing a compound of the formula



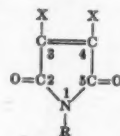
which comprises contacting a compound of the formula



with two molecular proportions of a compound of the formula MeSR at a temperature in the range of 0 to about 100° C. until substantially all of the chlorine is replaced by SR, in said formulas R and R' representing lower alkyl radicals, X and Y representing an element of the group consisting of sulfur and oxygen and Me representing an alkali metal.

2,865,730

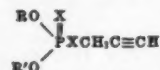
**Method of Regulating Plant Growth.** Patent issued Dec. 23, 1958, to Robert L. Gates, Medina, and Kenneth P. Dorschner, Middleport, N.Y., assignors to Food Machinery and Chemical Corp., San Jose, Cal. The method of regulating the growth of plants which comprises applying to the area where plant growth regulation is desired an N-substituted halomaleimide of the class formula



wherein X is selected from the group consisting of hydrogen and a halogen and at least one of said X's is a halogen, and R is selected from the class of radicals consisting of alkyl, aryl and alicyclic radicals, said application being at the rate of from about 0.5 lb. to 30 lb. per acre.

2,865,861

**Propargyl Phosphorothioates.** Patent issued Dec. 23, 1958, to Joseph W. Baker and George A. Saul, Nitro, W. Va., assignors to Monsanto Chemical Co., St. Louis. A pesticidal composition suitable for application to living plants consisting essentially of a major proportion of an inert carrier non-toxic to plants and a minor but effective proportion as an essential active component thereof a compound of the structure



where R and R' are alkyl groups containing less than four carbon atoms and X is a chalcogen of atomic weight less than 40, at least one of which is sulfur.

2,865,803

**Nematocidal Composition and Methods of Employing Cyclohexyl**

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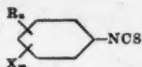
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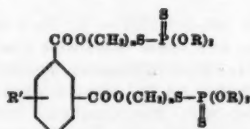
**Isothiocyanates.** Patent issued Dec. 23, 1958, to Norman J. Lewis, Des Peres, Mo., assignor to Monsanto Chemical Co., St. Louis. A method of destroying nematodes in nematode infected agricultural solids which comprises contacting the organism with a compound having the chemical structure:



wherein R is an alkyl group having up to 12 carbon atoms, X is a halogen atom, and m and n are each integers from 0 to 3 provided that the sum of m and n does not exceed 5.

2,865,804

**Pesticides.** Patent issued Dec. 23, 1958, to Abraham Bayley, Brooklyn, and Donald P. Cameron, Bronx, N.Y., assignors to Chas. Pfizer & Co., Inc., Brooklyn. A compound of the formula



wherein n is one of the integers two and three, R is an alkyl group containing up to four carbon atoms, and R' represents from one to two substituents consisting of alkyl and alkoxy containing from one to four carbon atoms.

2,865,812

**Metabolic Process for Production of Gibberellic Acid.** Patent issued Dec. 23, 1958, to Antony Borrow, Edward Garstang, Jefferys, and Ian Stewart Nixon, Welwyn, England, assignors to Imperial Chemical Industries, Ltd., London, England. A process as claimed in claim 1 in which carbon dioxide is introduced in a proportion not greater than 10% by volume of the air used for aeration.

## Winter Pastures in Texas Need Moisture

**ABILENE, TEXAS** — The Texas weather and crop pattern varies from one section to another. Generally, however, there is a need for moisture to stimulate winter small-grain pastures and enable farmers to plow their land.

The Lower Rio Grande Valley took a big loss on vegetables when a severe freeze penetrated the area. Large acreages of tomatoes, peas, peppers, squash and other winter vegetables were killed. Also light damage occurred in the citrus orchards.

Some greenbug infestations have been reported in small grain, while rust is quite prevalent in some areas. Grain mites are also showing up in some central Texas areas.

Hybrid grain sorghums, which have swept to all areas of the state, made heavy yields, and out-produced the standard varieties by several hundred pounds per acre. In the warmer sections of west Texas farmers got two harvests from maize crops, when the autumn rains caused the plants to sucker out and make a new crop of grain. However the last combining was only about half as heavy as the first.

## OREGON PRODUCTION

**PORTLAND, ORE.**—Oregon producers of vegetables, tree fruits, nuts, berries, field and seed crops harvested 2% fewer tons and received 4% less money in 1958 than in 1957, according to the general crop report released here by the USDA crop and livestock reporting service. Production of principal Oregon crops during 1958 was estimated at 5,304,000 tons, some 12% above the 4,715,000 average, but 2% below that of 1957. Total value of 1958 crop production, based on season average prices received by farmers for quantities sold up to Dec. 1, was estimated at \$237,072,000, down 4% from 1957.

## 207 Bushel Yield Wins Corn Contest For Indiana Youth

**LAFAYETTE, IND.**—Douglas Lowes, 15-year-old Shelby County farm youth, is the 1958 winner of the junior division of the Indiana Five-Acre Corn Growing contest with a yield of 207 bu. an acre.

Young Lowes lives with his parents, Mr. and Mrs. Melvin S. Lowes, on a 255-acre farm two miles west and south of Pleasant View. He is a sophomore at Triton Consolidated school, Fairland.

The 1958 junior title holder is a member of 4-H and Future Farmers of America. He is the first Shelby County youth to win the junior division, according to Gilbert P. Walker, Purdue University extension agronomist.

The contest is sponsored by the Purdue agricultural extension service

and the Indiana Crop Improvement Assn. Nearly 1,600 young farmers competed for the division title, won last year by John Roadruck, White County, with a yield of 209 bu.

Mr. Lowes and Phillip Roadruck, White County, with a 201-bushel-an-acre record, became eligible for membership in the exclusive "200 Bushel Club," according to Mr. Walker.

The top yield came from a 20-acre, well-drained field of sandy, silt loam, plowed last March. The hybrid seed, Moews CB 90, was planted May 12. It was drilled in 38-inch rows with seeds nine inches apart, making a population of about 19,000 plants an acre.

Two hundred pounds of 5-20-20 fertilizer an acre were applied in the row at planting. The corn was sidedressed deeply with 188 lb. anhydrous ammonia an acre. The crop was cultivated twice, once with a rotary hoe and again with a cultivator. Weed

CROPLIFE, Jan. 5, 1959—7

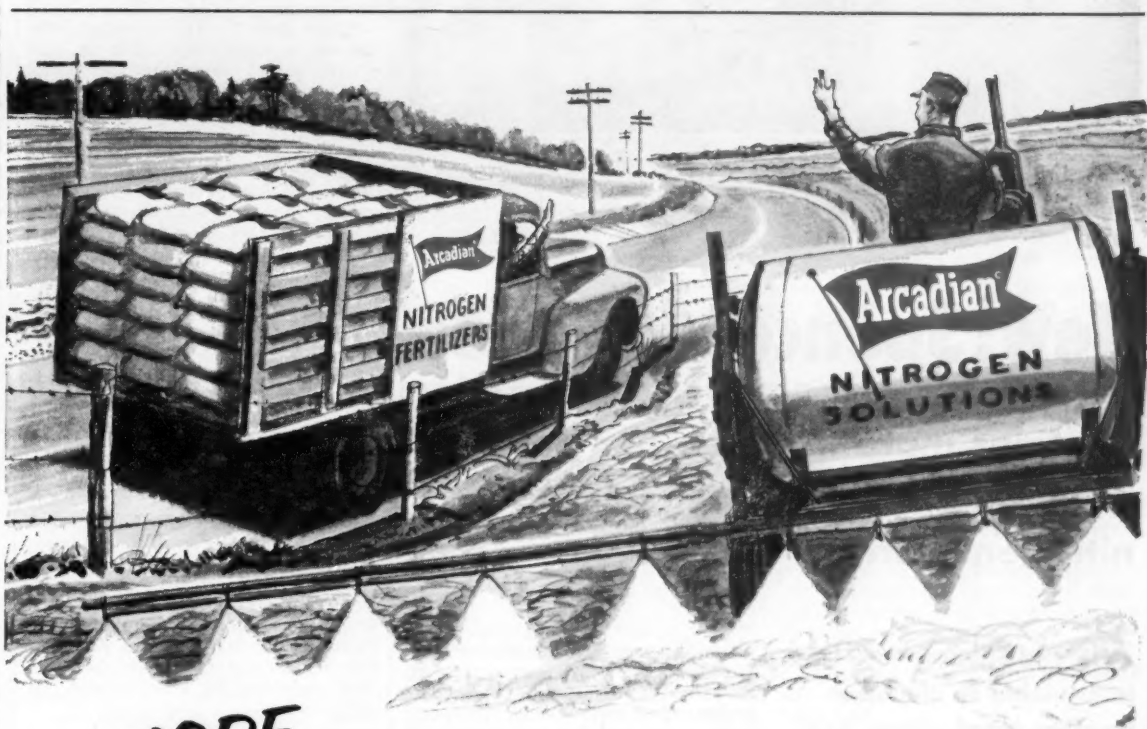
killer (2,4-D) spray was applied June 15.

The field last year was a timothy-clover pasture, which had been manured at the rate of five tons an acre.

## Brothers Open New Farm Store in Texas

**LOOP, TEXAS**—The Loop Farm Store has been opened by Tom and R. L. Hunt and will sell insecticides and fertilizer. The Hunt brothers are farmers, but saw an opportunity in such a business when a grocery store building became available.

In addition to retail sales, they have several mobile tanks for holding liquid fertilizer. These will be loaned to farmers who buy the materials from the store. The owners also furnish insecticides for the Fleming Crop Dusting Service which is located at Loop and operated by Don Fleming, a nephew of the Hunts.



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### ARCADIAN® LIQUID NITROGEN PRODUCTS

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All of the above products are for direct application to the soil. ARCADIAN Nitrogen is also the leading source of nitrogen used in the manufacture of mixed fertilizers.

**You see ARCADIAN Nitrogen everywhere!** That's because, over the years, more and more farmers have found that ARCADIAN products are higher in quality... more dependable.

**The most complete line!** You can fill the nitrogen needs of any customer when you sell the ARCADIAN line. You're handling the biggest, most complete line of liquid and dry nitrogen products on the market!

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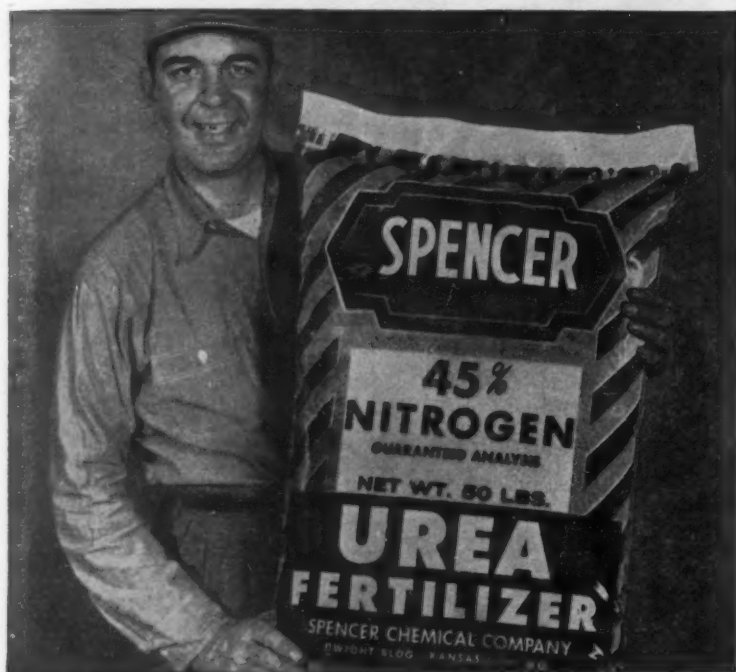
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Available in the all-plastic, weather-proof 50-lb. bag that your customers can re-use, or the time-tested polyethylene-lined 80-lb. bag, Spencer 45% Urea offers big, new selling advantages.

## New! Spencer 45% Urea

**Contains more nitrogen per pound of material than any other solid nitrogen source:**

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**LIKE** to go after bigger and better profits this year? Then stock up on new Spencer 45% Urea—the nitrogen source that gives you all these selling advantages:

**High analysis nitrogen!** Because Spencer 45% Urea contains more actual pounds of nitrogen per pound of material than any other solid nitrogen source, your customers don't have to handle as many bags per field.

**Farmers can cover more than twice as many acres with one spreader load of Spencer 45% Urea as they can with an identical load of ammonium sulfate!**

That means fewer stops to refill the spreader, more acreage covered in a lot less time. But that's not all!

**Easy to apply!** Spencer Urea is "perfection prilled" for trouble-free uniform spreading. It can be put down with an end-gate seeder or broadcast spreader, flown on with an airplane, plowed down or side dressed, even dissolved and applied as a foliar spray or in irrigation water!

You can be sure your customers will get full value, too, when they invest in Spencer Urea—it's guaranteed to contain 45% actual nitrogen. What's more, farmers can expect a return of \$3.00 for every \$1.00 they put into Spencer Urea!

**Less leaching!** In soils where leaching is a problem, Spencer 45% Urea offers special advantages. That's be-

cause Spencer Urea contains only "soil clinging" ammonia nitrogen. And by applying Spencer 45% Urea in the fall or early spring, efficiency is increased and chances of nitrogen loss are reduced to a minimum!

**So cash in on this opportunity** to offer your customers a new product, manufactured by a company they have learned to trust, accept and respect—Spencer Chemical Company.

Place your order now through your manufacturer's representative for new Spencer 45% Urea!



**Unload fertilizer in the rain?** Sure, if it's Spencer 45% Urea in the weather-proof bag! Stays dry, even in driving rain. Stores right in the field for several weeks! Empty bags can be used for storing seed, small tools, etc. Heat-sealed together, they make a tarp! Spencer Chemical Co., Dwight Bldg., Kansas City 5, Mo.

## Zero Tolerance Set By FDA on Aramite

WASHINGTON—The Food & Drug Administration has ruled that no residue of the pesticide Aramite will be permitted on fruit and vegetables moving in interstate commerce. The new order establishes a zero tolerance and rescinds tolerances of one part to a million now in effect.

FDA said its action was based on data from animal feeding studies submitted by the manufacturer, Naugatuck Chemical Division of U.S. Rubber Co.

In a statement from U.S. Rubber, the company said: "Aramite is not banned from the market by the new ruling of FDA, but it must be used in such a manner as to leave zero residue on edible crops after harvest."

The company is advising growers, the statement said, to use the chemical on edible crops only during the early growing season so that zero chemical residue remains on the crops at harvest.

Other uses for the chemical, the statement pointed out, such as controlling mites on cotton and ornamental shrubs, are not affected by the decision.

According to Earle S. Ebers, vice president and general manager of the Naugatuck division, the reason for the restriction is based on further toxicity data which shows that it is difficult at this time to set a safe level for Aramite on food. A panel of experts has considered the problem for FDA and has reached this conclusion.

In recent years, Dr. Ebers continued, Naugatuck has cooperated with the FDA by obtaining toxicological test data on Aramite. This toxicity study, conducted at an expense of over a half-million dollars, is believed to be the most thorough ever made on an agricultural chemical.

Since its introduction, Aramite has been used for mite control, and is regarded by farmers and orchard owners as a useful agricultural chemical, Dr. Ebers said. During the period in which it has been commercially used, there have been no cases of mites developing a resistance to the chemical, thus reducing its effectiveness, he concluded.

## AIKMAN REPORT

(Continued from page 1)

ducers at probably not more than 80% of capacity. In ammonium sulphate, production is more or less in balance with consumption, because major reductions have taken place due to high costs.

There is some fear on the part of European nitrogen producers at the new plants being erected in Greece, Turkey, Iran, Egypt, India, Pakistan and the mainland of China, as well as additions to existing plants, Aikman points out.

"This construction represents long-distance increases and for the next two years the expected production is unlikely to increase beyond the figures presently known, and might be less, owing to voluntary reductions, and to consumption increasing all the time," Aikman said.

Aikman contended that the biggest importer is the mainland of China and there has been considerable pressure there to get lower prices accepted, which has been successful. This has been done because of the big potential of the Chinese market and the desire on the part of major producers to retain a share of it.

In Japan, Aikman reminds, owing to cancellations (for political reasons) of part of the contract between mainland China and Japan, stocks are mounting up and, as storage facilities there are not large, it seems probable that Japanese production in the near future will have to be reduced unless large sales are made to other Eastern markets.



T. H. Caldwell, Jr.

**OFFICE MANAGER**—T. H. Caldwell, Jr., has been appointed manager of the Dow Chemical Co. sales office which will be opened soon in Charlotte, N.C. The Charlotte office territory will include all of North and South Carolina and parts of Virginia and Tennessee. Mr. Caldwell joined Dow in 1940 and served in various positions until he became associated with the company's Atlanta, Ga., office in 1950. In 1953 he was appointed manager of automotive products sales. He was educated at Michigan State University, receiving a B.S. degree in chemical engineering.

## Northeastern Weed Control Meeting Set

NEW YORK—The 1959 meeting of the Northeastern Weed Control Conference will be held Jan. 7-9 at the Hotel New Yorker here. Some 550 members of the industry, government and agricultural experiment stations are expected to attend.

A feature of the meeting will be a series of discussions on conservation and public health. J. W. Leonard, Michigan Department of Conservation, will discuss "The Use of Herbicides for Conservation Purposes."

Jan. 8 will have a full day of reports in the section on public health concerning air pollution, ragweed control, weed control programs and others. Some of the speakers and their topics are:

• Alexander Rihm, Jr., New York State Department of Health, "Plans for a Ragweed Control Program for the State of New York."

• Warren H. Wagner, Jr., University of Michigan, "Botanical Research on Atmospheric Pollution."

• Alfred H. Fletcher, New Jersey State Department of Health, will act as panel leader in a discussion on "Pollen Pollution of the Air, What Can Be Done About It?"

As in previous years, the program for the three-day meeting will open with a general session, followed by concurrent meetings for (1) horticulture crops, (2) agronomic crops, (3) industrial and highways, (4) public health and (5) aquatics, conservation and forestry.

Of general interest, W. F. Meggitt, Rutgers University, will report on "Promising New Developments in Weed Control."

## New Sulfur Producer

TULSA—Operations of Tuloma Gas Products Co., Tulsa, have been expanded to include sulfur and all liquid products produced in natural gasoline and cycling plants. Tuloma had previously marketed only LP-gas products. Sulfur is marketed from five plants in West Texas and Wyoming, where it is recovered from sour natural gas.



## Store Layout Tops In Importance for Texas Dealer

By RUEL McDANIEL  
CropLife Special Writer

Harry A. Wilson, owner of Wilson Feed & Farm Supply, El Campo, Texas, like many another farm supply merchant, kept telling himself, over the years, that if and when he built a new store he would pay a lot of attention to layout. He felt that store layout had been a neglected end of the farm supply business, in that so many stores were housed in "buildings" rather than stores planned for a specific type of merchandise. And he believed the proper layout could reduce manpower and overhead.

A year ago he moved into a new building, constructed for a farm store operation and laid out according to his specifications.

The result has been that, although volume has increased materially since moving into the new location, manpower has been reduced and overhead actually is less.

The basic factor that enabled Mr. Wilson to reduce his store force by one man was the improved unloading and loading facilities in the rear area of the new building.

Although the new store backs up to a railroad siding, so that carload shipments may be unloaded directly from the cars to the store, this feature is not the major one in reducing handling costs. It would be almost as economical, even though there were no railroad siding, for the same layout could be used for more truck platform footage.

The main store building is 50 ft. wide, fronting on a semi-business street, and 76½ ft. deep. Across

(Turn to STORE LAYOUT, page 14)



THOUGH THE BUILDING was old, Jim Drye of Guthrie, Okla., has made many improvements since buying the feed store. He added a set of large public scales, an attractive office and more storage. All this plus aggressive salesmanship has increased the store's volume rapidly.

## Aggressive Outlook Pays as Oklahoma Dealer Continues to Grow, Build Profits

When 29-year-old Jim Drye bought a farm store in Guthrie, Okla., he knew he wasn't getting anything except the building. The business had been closed a year and a half and the firm's customers had found other places to trade.

But during the ensuing two years young Mr. Drye has built a nice business in farm chemicals, feeds, farm supplies, and truck hauling. His place is one of the busiest in town and his sales stretch out hundreds of miles from Guthrie because of his two 19-ton trucks.

The demand for fertilizers, insecticides and herbicides is increasing locally, and as a sideline to the feed business they bring in a sizeable profit.

"It takes a bit of talking to sell them," he said. "I don't try to convince a farmer against his will, but in their visits here for feed we often talk about fertilizer and how much it will increase yields. I find that quite often a dealer misses a sale because he doesn't mention the item."

The most widely used fertilizers in the area are 10-20-0, 16-20-0 and

some 5-10-5. He has also increased nitrogen sales by getting wheat farmer to topdress their fields in September. By discussing these needs with farmers, he has been able to contract fertilizer sales ahead of time.

"If you wait until farmers are ready to apply fertilizers, they may buy them at the closest place," Mr. Drye said.

Shortly after acquiring the store, he saw an opportunity in trucking. Quite often he turned the office over to his wife while he made trips to distant points for supplies. This has proved so profitable that now the trucks are kept busy most of the time.

With them he has found many openings for bulk sales. A few times he has hauled fertilizer as far away as Clint, Texas, which is 700 miles to the southwest. And fairly regularly he hauls from Nebraska into Oklahoma, selling by the truckload. Another lucrative haul has been in trucking stock salt from Hutchinson, Kansas.

When he doesn't have a market of his own, he hauls for other dealers and is now regularly trucking for three of them. Mr. Drye doesn't believe in fighting his competitors, particularly on prices. He usually has one price except for bulk sales when a small discount is given.

"I find that dealers who sell goods too cheap usually hold out on service," he said. "I try to make a reasonable profit, but I also give the farmer all the help he needs. I'll check his fields with him, contact experts for problems we can't solve, and I'll do him all the favors possible. If he gets good service, he is not so likely to hunt for cheaper merchandise."

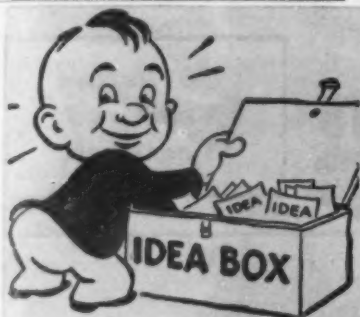
In his traveling, Mr. Drye often finds an opportunity in picking up other loads. Last year down in Texas he noticed the watermelon harvest was in full swing. He found that field prices were quite low, so he hauled 120 tons back to Oklahoma during

(Turn to AGGRESSIVE, page 14)



WHEN WILSON'S Feed & Farm Supply, El Campo, Texas, changed its location about a year ago, the owner Harry A. Wilson made sure that the new store was

planned specifically for his operation. "Too many stores are just housed in buildings rather than in structures built with definite plan in mind," he says.



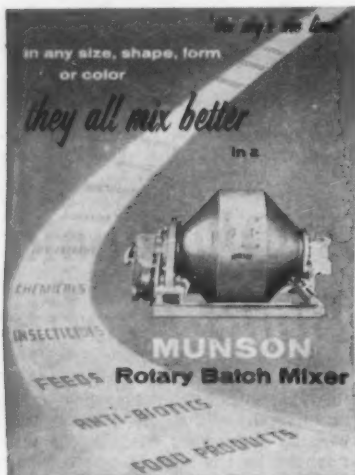
## What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

### No. 7301—Folder on Batch Mixers

Rotary batch mixers are described in a folder recently released by the Munson Mill Machinery Co. The four-page, two-color folder contains pictures and specifications of two types of mixers—Type 4 and Type 7. Op-

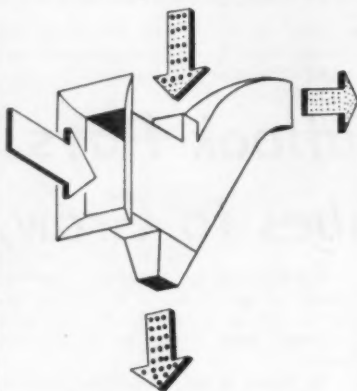


tional features of the mixers, such as quick-open door, internal vent, air control cylinder, flush valve, strip heater and internal spray pipe, are

also described. For copies, check No. 7301 on the coupon and mail to this publication.

### No. 6854—Material Classifier

A "Gravitational" classifier which utilizes gravity, drag and centrifugal forces to separate dry fines from coarse materials has been announced by the Buell Engineering Co. The unit has no moving parts and can be used in classifying fertilizers, chemi-



cals and many other materials. Material enters the classifier at the top and low velocity air is blown through

it at right angles. The air stream then turns sharply upward and passes between widely spaced vanes. In doing so it collects particles smaller than a given size. For details, check No. 6854 on the coupon and mail to this publication.

### No. 6852—"Crop Protector"

Finco, Inc., is marketing a self-propelled unit called the "Crop Protector" which sprays, dusts, defoliates, tops, seeds, fertilizes and applies granular DDT, according to company literature. Described as a high clearance machine, the "Crop Protector" is recommended for cotton, corn, tobacco, peanuts, grains sorghums and other row crops. The unit is available in horsepower sizes of eight, 18 and 25 and can spray more than 200 acres per day, it is claimed. A folder describing the unit is available by checking No. 6852 on the coupon and mailing it to this publication.

### Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

### No. 6840—Aerial Equipment Brochure

Revised brochures describing Transland Aircraft's line of dust and liquid spray aerial applying equipment are now available. Described in the publication are hoppers, agitator gates, spreaders, plumbing, pumps, dump and pressure regulator valves, trailing edge booms and nozzles, pressure gauges, pilot controls and spray kits. Also included is a current Transland price list. For copies, check No. 6840 on the coupon and mail to Croplife.

### No. 6847—Portable Sprayer Line

A new line of sprayers, called "Stroll 'N Spray," has been announced by the Universal Metal Products Co., Division of Air Control Products, Inc. Each of the company's three sprayers in the line carries spray solution in a wheeled tank which rolls behind the user. The "Easy Pump" model builds up spraying pressure by moving the towing handle. For details, check No. 6847 on the coupon and mail to this publication.

### No. 7305—Moisture Balance

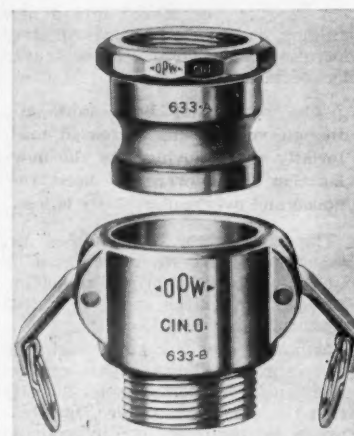
The Ohaus Moisture Determination Balance is a combination drying unit and precision balance which provides an easy way to measure moisture content of a wide variety of



products and materials, announced Seedburo Equipment Co. The unit can be used for solids or liquids and shows the percentage of moisture directly to plus or minus 0.170. The percentage of moisture loss can be read directly throughout the entire cycle as the moisture is driven off, the company says. For details, check No. 7305 and mail to this publication.

### No. 6850—Stainless Steel Couplers

Stainless steel "Kamluk" quick couplers are now available from Jordan Industries Sales Division of OPW Corp. The couplers are used with



hoses, pipes and equipment needing a quick coupler. The Kamluks are available in 1/2 in. to 3 in. sizes. The couplers are suitable for pressures to 200 psi and temperatures to 550° F., the company says. Check No. 6850 on the coupon and mail for details.

### No. 7258—Weigher, Filler Bulletin

The Holm Model GF weighing and filling machine for packaging of free-flowing materials is described in a bulletin offered by the Richardson Scale Co., Clifton, N.J. Bulletin H-2 tells how the machine operates, lists specifications and describes component parts. A photograph of the unit is included and labeled for working parts. Check No. 7258 on the coupon and mail to this publication for copies.

### No. 6841—Booklet on Tin Fungicide

An organic tin fungicide, recently developed by a German chemical firm for treating leaf-spot and blight on potatoes, is discussed in "Tin and Its Uses," published by the Tin Research Institute, Inc. The article shows illustrations of crops which have been left untreated contrasted with crops that have been treated with the tin fungicide. Copies can be obtained by checking No. 6841 on the coupon and mailing.

### No. 6848—Film on Weed Killer

American Cyanamid Co. announces the availability of a new film showing the effects of amino triazole on perennial weeds like Canada thistle, cat-tails and quack grass. Entitled "Roots and All," the color-sound movie takes place in eastern, midwestern and

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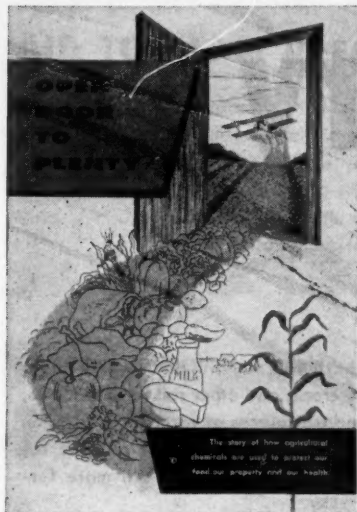
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western U.S. According to the company, the 16-minute, 16mm film is available for showings at weed control meetings for agricultural groups. For details, check No. 6848 on the coupon and mail.

### No. 6846—Pesticide Fact Book

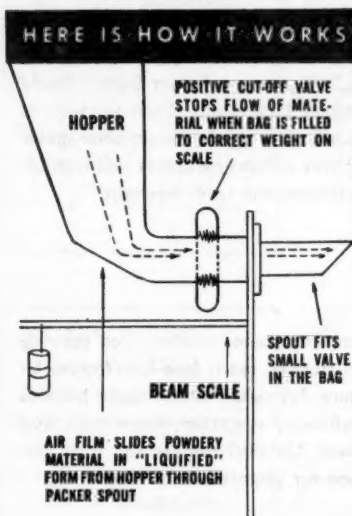
Publication of the "Open Door to Plenty," a pesticide industry fact book, has been announced by the National Agricultural Chemicals Assn.



The book tells the story of agricultural chemicals and how they are used. The 64-page illustrated booklet reviews progress which has been made in pesticides and reports on future advances which are expected in the industry. For copies, check No. 6846 on the coupon and mail to this publication.

### No. 6843—Valve Bag Packer

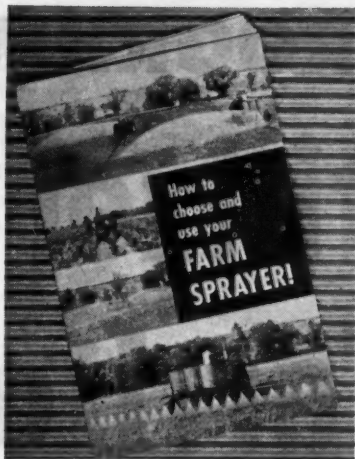
The fluidizing air principle of conveying powdery and free flowing materials is employed in the new Air-Pac valve packer introduced by the



E. D. Coddington Manufacturing Co. The unit fills standard valve bags from 20 to 100 lb. No moving parts are used, the company says, and no motor is required. The packer is ready to operate when connected with a 110 volt AC service and to standard low capacity air compressor system. A built-in scale provides weight control and shuts off the packer automatically when desired weight is reached. Check No. 6843 on the coupon and mail for details.

### No. 6845—Booklet on Spraying

"How to Choose and Use Your Farm Sprayer" is the title of a booklet being offered by the Hanson Equipment Co. The 16-page booklet gives tips on selecting the right kind of sprayer and how to use it efficiently. It includes information on the proper calibration of equipment plus weed and insect recognition charts



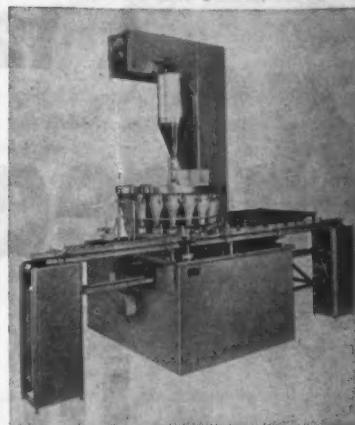
with suggested chemicals for their control. For copies, check No. 6845 on the coupon and mail to this publication.

### No. 6849—Copper Hydrate Complex

A technical bulletin on "Dy-Q-Plex"-1, copper hydrate complex, has been prepared by the Henry Bower Chemical Manufacturing Co. Data on the material plus specifications and package information is included. Charts on the material's physical properties, fungicidal properties and effects on marine organisms supplement the text. Copies of the bulletin can be obtained by checking No. 6849 on the coupon and mailing to this publication.

### No. 6842—Rotary Filler

Frazier & Son announce the Model "P" High Speed Rotary Whiz-Packer, a fully automatic volumetric filling machine. The machine is designed to handle a variety of dry products, ranging from powders to granular and bulk materials. The unit is cus-



tom built to plant specifications and is powered by two ¼ h.p. motors. For more complete information, check No. 6842 on the coupon and mail to this publication.



This particle of Swift's PC-47 Triple Superphosphate is magnified 9 times actual size.

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These tonnage gains have been the direct result of an increasing awareness by farmers of the role balanced fertilizer programs can play in more profitable farming. Many groups and individuals have helped.

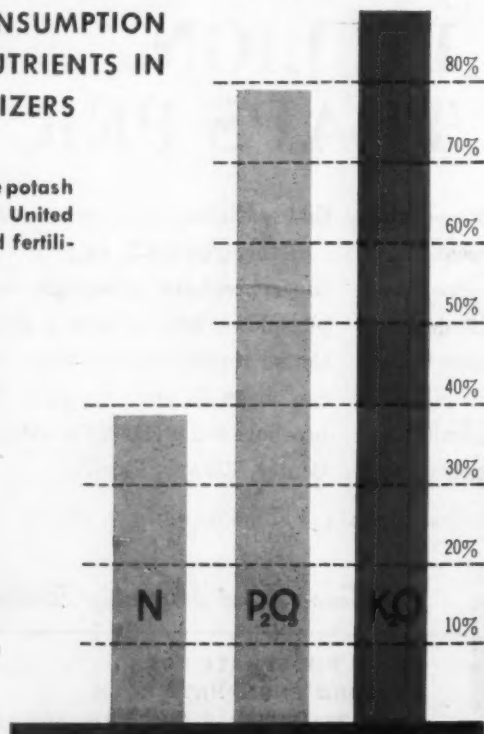
The American Potash Institute is proud of having shared in this joint effort. It is a service organization, designed to help you expand the use of balanced plant foods.

You are invited to take advantage of the many Institute services. They will help you sell fertilizer. Simply mail the coupon at the bottom of the opposite page, or get in touch with the American Potash Institute representative in your area.

This service brings tonnage-building soil fertility facts you can use.

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Nearly 87% of the potash consumed in the United States is in mixed fertilizers



SOURCE  
U.S. Department  
of Agriculture,  
June, 1958 (ARS 41-19-1)

## WALL POSTERS

### NPK

Potash Institute charts, on nutrient deficiencies, plant food utilization by crops, and other soil fertility topics, have become standard sources of farm knowledge on fertilizers. These charts are available for your use, for display purposes. They will help you sell more fertilizer.

## SPECIAL BOOKLETS

### NPK

Mail the coupon for a complete listing of special booklets. These include "Fertilizer Placement," "Hidden Hunger In Crops," "Potash Deficiency Symptoms," "Forest Fertilization," and "Potash In Agriculture." They will help you help your customers.

## COLORLED SLIDE SETS

### NPK

For use in any standard slide projector. These include "Successful Alfalfa—You Can Grow It," "Soil Fertility and Soybeans," "Potassium Hunger Signs," "Safe and Efficient Fertilizer Placement." Each set with its own narration. Excellent for dealer or customer meetings. Used by fertilizer industry, teachers and agricultural advisers for classes and farm meetings.

## MOTION PICTURES

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For dealer meetings, customer meetings, or showing on local television stations, use a free-loan Potash Institute motion picture. Full color 16 mm. sound pictures on soil testing, deficiency symptoms, tissue tests, and other subjects. Over 300,000 people see them annually. Mail coupon for complete information.

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### NPK

Keep you informed on soil fertility subjects in your area. A time-saving digest of information on subjects important in your particular region. Extra copies also available for your customers.

## BI-MONTHLY MAGAZINE

### NPK

The American Potash Institute's magazine, "Better Crops with Plant Food," is read and studied by agricultural leaders the nation over. Articles in "Better Crops" are written by authorities in the soil fertility field. In addition to articles on the fertilization of major crops, other subjects include forest tree nutrition, lawn and turf fertilization, flower fertilization, and house plant care and fertilization. Circulation exceeds 25,000.



## REPRINTS OF SOIL FERTILITY ARTICLES

### NPK

Reprints of soil fertility articles, appearing in "Better Crops with Plant Food," are used by the fertilizer industry as direct mail or over-the-counter fertilizer educational material. They also go to high school and college classes. Between 300,000 and 400,000 are distributed annually.

## AID TO FARM PRESS, RADIO, TV

### NPK

Potash Institute staff members work closely with farm magazine editors, radio and television farm directors. Many articles, photos and broadcasts stressing improved soil fertility practices have been originated or aided by Institute agronomists. These articles, pictures and broadcasts help you sell more fertilizer.

## FERTILIZER DEMONSTRATIONS

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In cooperation with official agricultural agencies, the Potash Institute supports field demonstration programs which show farmers the value of correct fertilizer usage. Check your nearby Institute representative for demonstrations in your area.

## REGIONAL AGRONOMISTS

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These men are practical scientists, well informed in the agriculture of the particular area in which each serves. Contact the one nearest to you, which can readily be determined from the map, below. You will find him ready to advise and help you in every way he can.

## ABSTRACTS OF SOIL FERTILITY ARTICLES

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A valuable and time-saving service. Abstracts of scientific and technical articles on soil fertility from journals and bulletins the world over.

## FELLOWSHIPS, RESEARCH GRANTS

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American Potash Institute graduate fellowships and research grants in some forty states and provinces have developed information on improved fertilization practices leading to increased usage.

They have also helped train a large number of professional agronomists for responsible positions in the fertilizer industry, colleges, experiment stations and the federal government.

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## STORE LAYOUT

(Continued from page 9)

the rear is a loading and unloading platform, 50 ft. wide and 26½ ft. deep.

A low-angle ramp leads from the inside edge of the platform to the sales floor directly below. The platform is about 4 ft. higher than the sales floor and 4½ ft. above the ground at the railroad side and the same height on the end where trucks load or unload.

Sliding doors give ample working space along the siding and one large door provides working area at the end of the platform area for truck crews to work.

The platform area is sufficiently large to store most bulk fertilizers and feeds, such as are bought by farmers and ranchers by the pick-up truck load or more. Thus, when a truck or carload of fertilizers come in, the items which sell in large orders remain on the platform area, while the small-order lines go down to the main sales floor. Only samples of the large-order lines go to the floor.

Such merchandise that must move down to the sales floor is moved quickly and easily down the ramp on hand-trucks. As it sells, if the customer wishes to load from the rear, it is moved up the ramp the same way, but most sales from the main floor are smaller orders and generally are loaded into the cus-

tomers' cars in front of the store.

The platform is of such height that the average truck backs up to it and the truck bed is level with the floor of the platform area. This enables the man loading to wheel the hand-truck directly from the platform, where it has been loaded from stock stored here, onto the truck without strain or assistance.

The simple arrangement not only has eliminated many handling problems but it has made the work easier for the man who unloads and loads, Mr. Wilson stresses.

"When we were in the old store," Mr. Wilson says, "we were always crowded for space, and yet we had as much floor area there as we have in the new store. It simply was not laid out to the best advantage for a feed store. We had no

adequate loading facilities, and as a consequence, we were forced to handle heavy sacks more than we should have. It was costing us money because of poor planning.

"After I knew that we eventually would have a new building, I made notes of the things I wanted to change, and this rear platform item was the most important. It has worked out even better than we had anticipated."

As a result of reduced handling and easier unloading and loading, it was possible for the store to operate with one less man than formerly—a man who devoted most of his time to loading and unloading. Now the man who does this performs the tasks with ease and still has time to help out on the sales floor.

A minor feature of the new building is a narrow frontage extending 40 ft. beyond the 50-ft. main store frontage and having a depth of 14 ft., used mainly for the display of yard and garden supplies.

## TO UP SAFFLOWER ACREAGE

GLASGOW, MONT.—Pacific Oilseeds, Inc., wants to increase eastern Montana's safflower acreage by 30% next year. Hannes A. Hallgrimson, company field agent, said plans are to put 80,000 acres into the new crop. "If the farmers are ready to grow safflower to the extent of our 80,000 acres," he stated, "Pacific Vegetable Oil Corp. will build a processing plant in 1959, with construction beginning in the spring."

## ILLINOIS PROGRAM

URBANA, ILL. — Businessmen serving agriculture in this area will have an opportunity to hear about future trends and what they mean at the first Agricultural Industries Forum at the University of Illinois, on Jan. 27-28. In the program announced recently by E. E. Broadbent, chairman, the joint industry-college committee has arranged general sessions of interest to all food and agricultural industry representatives.

## AGGRESSIVE

(Continued from page 9)

the next few trips and sold the melons for a good profit.

"I'd like to work this place into a one-stop farm service," he said. "Fertilizers, for instance, perhaps won't make a dealer a living in this area, but they help out. Also such items as insecticides, weed killers, binder twine and other products that sell well for a few months each year. So I want to add items one at a time until I get a well-rounded, year-around business."

"A dealer must do that or else specialize. And if he specializes he must stretch out and grab the business from a half dozen other dealers."

"I didn't have much business experience before buying the store," he explained, "but my idea is to help farmers with their problems, to be friendly and treat customers fairly. It seems to be paying off."

"Give us another two years and maybe we'll really have something to show people."

## Gloomicides

A play boy was proposing to a girl who refused to take him seriously.

"I'm fast and loose now," the play-boy said, "but if you'll marry me, I'll be just the opposite of what I am today."

"That's what I'm afraid of," the girl replied. "The opposite of fast and loose is slow and tight."

★

A friend of ours recently bought a foreign automobile and after careful computation over a month came to the conclusion that he was not getting the phenomenally high mileage so often credited to such cars. So he took it to a local mechanic who, after checking it thoroughly, pronounced it in perfect condition. "But isn't there something I can do to increase this mileage?" he asked.

"You can do the same as most foreign car owners do," replied the mechanic. "Lie about it."

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TEST IT YOURSELF. This hand compression chamber creates pressures up to 600 lbs. per sq. inch, but it can't cake Lion E-2. Your Monsanto salesman will show you how to compare Lion E-2 with any other ammonium nitrate you carry.





## FARM SERVICE DATA

### Extension Station Reports

The corn ears harvested this fall can tell a lot about the fertility of the soil and how well the plants were fed, according to Marshall Christy, University of Missouri extension soils specialist.

Mr. Christy points out that such information can mean extra dollars to farmers through better yields next year.

The ears reflect whether the soil's plant food was sufficient or lacking in some respect, he says. If the ears were well filled, and had luster and

polish, then the crop received all the nutrients it needed.

Mr. Christy lists these things to watch for:

- Small ears pinched off at the tip indicate a lack of nitrogen. Pollinated kernels failed to fill. Nitrogen is an essential nutrient throughout the growing season. It is particularly useful when silking and tasseling starts.

- When ears are small and sometimes twisted, with part of entire rows of kernels missing, the plants may be suffering from phosphorus starvation. Rows of kernels are often

crooked and the tips of the ears are usually not filled.

- Chaffy-like nubbins, with loose, dull-colored kernels can mean a lack of potash. Tips of ears don't fill.

Mr. Christy says that severe limitations of one nutrient may result in multiple deficiency symptoms showing up. Phosphorus or nitrogen shortages may be caused by a "poor" lime situation.

★

Fertilizing pastures can boost forage yields by 50%, improve the quality of the herbage and increase farmers' profits from dairy and meat products, reports Dr. G. T. Webster, head of the University of Kentucky's agronomy department.

In Kentucky alone, more than 8,600,000 acres of pasture land could be profitably fertilized, says Dr. Webster in a statement summarized here by the Midwest division of the National Plant Food Institute.

CROPLIFE, Jan. 5, 1959—15

"At present, fertilizer use on pastures average only 25 lb. per acre," he says, "compared to 250 lb. per acre recommended by the University agronomists."

Dr. Webster points out that when legumes are part of the pasture seeding mixture, some nitrogen is needed in addition to the phosphate and potash in the fertilizer applied. Lime may be needed, too, if soil tests indicate.

Keeping legumes in the pasture stand calls for regular applications of fertilizer containing phosphate and potash, he says.

H. F. Miller, extension agronomist of the university, reports that if recommended amounts of fertilizer were used on Kentucky's present hay and pasture land, there would be a market for close to 1,000,000 tons of fertilizer.

★

Downy mildew may attack cabbage in the Hastings area from September or October until the end of the growing season the following spring.

The fungus *Peronospora parasitica* (Pers.) ex fr. causes downy mildew of cabbage, cauliflower, broccoli and closely related crucifers. Outbreaks occur when heavy dews or rains keep the plants wet for long periods and night time temperatures range between 50° and 60° for several nights in succession.

Downy mildew is a leaf-spotting disease. The fungus appears on the leaves as a white mold, which can be seen easily when the plants are wet. It stunts or kills young seedlings, and may retard the growth of older plants. Spots on the head leaves of cabbage mar their appearance, and badly spotted heads are not salable.

According to Dr. A. H. Eddins, plant pathologist in charge of the potato investigations laboratory, Hastings, downy mildew can be controlled satisfactorily with the fungicide chloranil, nabam-zinc sulfate and zineb.

He said to begin spraying or dusting the plants a week to 10 days after the seed is planted, or sooner if the disease is present. Continue the treatment three times each week, with a 1- to 2-day interval between applications, except when temperatures drop to 40° or lower or heavy rains interrupt the schedule. Use 80 to 150 gal. of spray or 15 to 35 lb. of dust per acre at each application, depending upon size of the plants.

Fifty percent chloranil wettable, 4 lb. in 100 gal. of water, and 5% stabilized chloranil dust are recommended for controlling downy mildew in plant beds. Dr. Eddins says that chloranil usually has given better control of the disease than other fungicides. However, if chloranil cannot be applied at the recommended rates, spray the plants with nabam, 2 qt. plus  $\frac{1}{4}$  to 1 lb. zinc sulfate in 100 gal. water, or zineb,  $1\frac{1}{2}$  lb. in 100 gal. water. There is less danger of injuring small plants by over-treating with these fungicides than with chloranil.

Dr. Eddins says treat plant beds until all usable plants are drawn. Where the crop is started from seed sown in the field, continue treating until the plants are thinned to a stand.

Treatment of maturing cabbage at 6- to 7-day intervals is recommended when the disease is severe. Use nabam 2 qt. plus  $\frac{1}{4}$  to 1 lb. zinc sulfate in 100 gal. water or 6.5% zineb dust. Use 100 to 150 gal. of spray or 30 to 50 lb. dust per acre at each application. Use a good commercial spreader-sticker with the spray as recommended on the manufacturer's label. The tolerance for each of the two fungicides recommended is seven ppm and seven days is the minimum time between the last application and har-

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**THE WETTEST PLACE... NO CAKING!**  
Mobile, Ala. 67.57 in. rainfall per year.



**THE COLDEST PLACE... NO CAKING!**  
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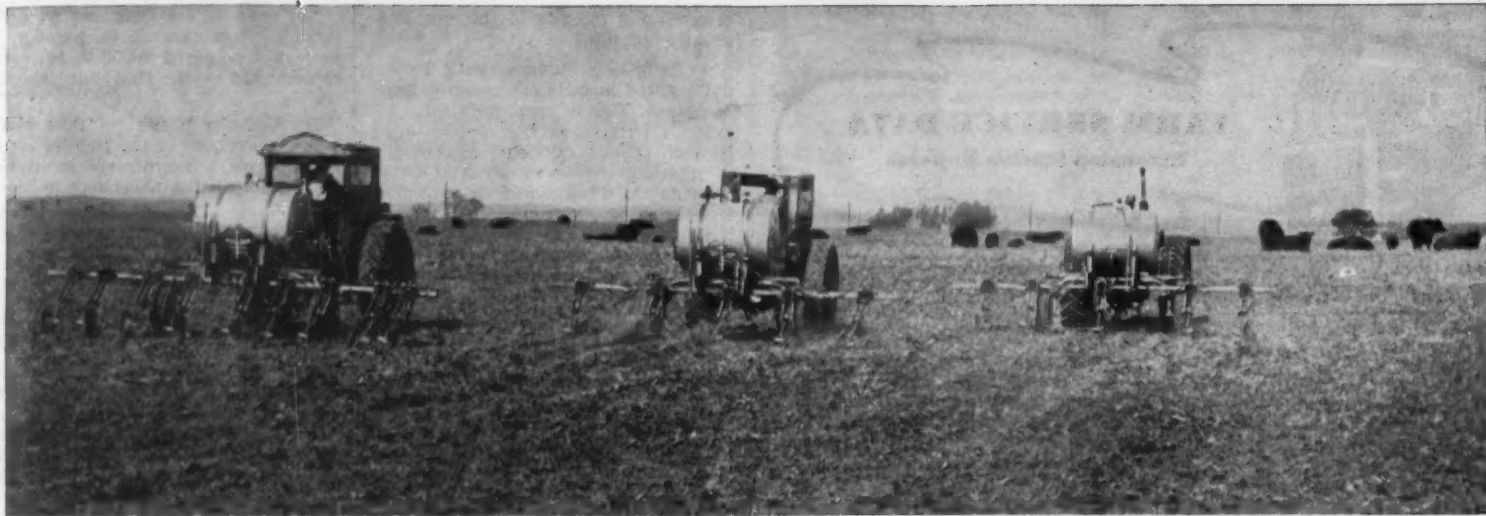
\*TRADEMARK OF MONSANTO CHEMICAL CO.

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# Monsanto

ST. LOUIS 66, MO.



THREE OF the Beermann Bros. tractor-applicators applying fertilizer to farmland near Dakota City, Neb. This type of custom application has many

advantages because the dealer often has more experience in applying it, says Mel Beermann, in charge of fertilizer at Beermann Brothers.

## Dealer Adds Fertilizer Line, Changes Area Farming Methods

By JESS BLAIR  
Croplife Special Writer

Since they added the selling of fertilizers to their alfalfa dehydrating plant in 1952, the Beermann brothers of Dakota City, Neb., have been making changes in the farming methods of this area. They have found that fertilizers increase crop yields, but something else they learned is that the trace elements are important.

"We had farmers spending \$12 to \$15 an acre fertilizing brome grass and they were still not getting the best results," said Mel Beermann, manager of the fertilizer division of Beermann Bros. Dehy. "This is when we became interested in the trace elements which necessitated a comprehensive soil test."

This operates somewhat differently from most soil tests. It includes tests for primary, secondary and trace elements rather than just the primary plant foods. Mr. Beermann tries to get soil samples covering a depth of seven inches, not to exceed 40-acre areas, which he sends to a laboratory at Kearney, Neb. Here the soil samples are broken down not into the major elements only but also into the secondary and trace elements. The laboratory also tests the pH, soluble salts and organic matter.

When such an analysis is completed, then Mr. Beermann can sit down with the farmer and work out a balanced fertilization program.

"We must charge for a soil test such as this one," he said, "because there is too much time and expense to take them free."

The Beermann's sell both dry and liquid fertilizer, but stress a nitrogen solution. They have two 22,000

gal. tanks located at their headquarters, which is in a farming community several miles west of Dakota City.

They sell fertilizer in two ways. The farmer may buy it and put it on his fields with his own equipment. If he wants to do this, the company will place a storage tank on his farm and deliver the material to him. They will also show him how to apply it and help him get started.

They prefer to apply the fertilizer themselves, because they have the equipment and know-how, and can do a better job. They own two large five-row disc applicators and also have three aluminum tank sprayers, all of which are pulled by tractors. In addition, they have a bulk truck for dry fertilizers and tank trucks for spraying nitrogen and mixed solutions.

When they get a new customer, here is their method of operation. They take the soil sample and at the same time make a map of the farm, drawing the fields to scale and showing all landmarks.

Mel Beermann writes down the field's cropping history for the last two years and also puts in the crops to be grown for the coming year. When the soil sample results are received from the laboratory, he and the farmer work out a fertilization plan, which shows the amount and kind of fertilizer and the time to be applied.

When time to start work, Mr. Beermann hands a work sheet showing all the information to his brother Dick, who is production manager. Since the drivers are well-experienced and know the area, there is very little supervision needed. This

allows Mel Beermann to spend his time with management problems and eliminates many of the small detailed duties.

One of his biggest jobs was in getting farmers to use enough fertilizer. Yet his experience in public agricultural work stood him in good stead when he went into the alfalfa dehydrating business with his five brothers. He had been a county extension agent, worked for the Farm Bureau and spent some time with a large seed company.

While working with farmers, he had noticed that yields were lower than necessary because fertilizers were not used at all or were applied in limited amounts. He felt that a fertilizer service would be of great benefit to the community.

All around the Beermann plant lies the fertile Missouri River Valley, which is one of the best farming areas in the nation. But after 100 years of cultivation, the plant food had diminished. Many farmers did not realize this, which made the task of the fertilizer dealer doubly hard.

Yet in the six years they have operated, the Beermann brothers have made steady progress. They sold from 500 to 1,000 tons per year during the

dry years, but doubled these figures during the wet seasons.

"Just telling people they need fertilizer is not enough," said Mr. Beermann. "It has required a detailed campaign of promotion."

This was handled in several ways. First, he believes in advertising and runs large ads in the weekly newspaper. He often shows a picture of a prominent farmer who has a soil deficiency and had a complete soil test made. Then the farmer tells his story in the form of a testimonial. If there is a lack of some mineral, Mr. Beermann may also have a short article about it from some agricultural leader or college professor.

Another method of showing profits from fertilizer is to take pictures. When a field shows a decided improvement from fertilizer, he has large eight by ten-inch glossy pictures made. If he is running a test, he will put the fertilizer down in strips so the pictures will show a contrast. They try to include the farmer in the picture, and then his family receives a copy of the picture from the Beermann's.

Aside from advertising, the Beermann's try to make their place a sort of headquarters for all farmers and stockmen. At the office



MEL BEERMANN (right), manager of fertilizer division of Beermann Dehy, Dakota City, Neb., is shown talking fertilization problems with a customer.

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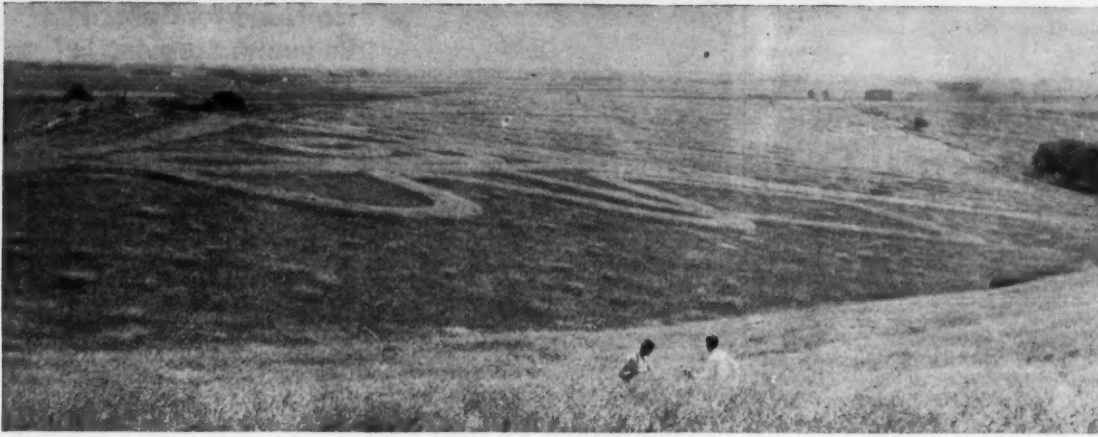
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**A TEST STRIP** is a good way of showing fertilizer results. Strips of tall vegetation were fertilized with solution that contained nitrogen, phosphorus, potassium, sul-

phur and magnesium. Pictures such as these are printed in the newspapers by Mel Beermann, in charge of fertilizers, Beermann Dehy, Dakota City, Neb.

they serve coffee and soft drinks to all visitors, and give away such things pencils, fountain pens and other items. No high pressure selling methods are used, yet talks on farm management are common.

One trend Mel Beermann helped start in this area is off-season fertilization. He has good result from putting down nitrogen in February and March and working it into the soil. Also some customers are now cutting their corn stalks soon after harvest and applying fertilizer then.

"This is something else that didn't just happen," he said. "I felt it would pay, so I kept talking about it until two or three farmers decided to try it."

The Beermann brothers may have had an advantage over other dealers because the boys own 800 acres of

farm land. They can learn about fertilizer results by applying it to their own fields. As a selling tool, this isn't too effective. It is better to establish tests on land where the owner has no interest in the company.

**The elements most needed in this area are nitrogen, phosphorus and some potash. Other elements used in the 1958 fertilizer year included sulphur, magnesium, iron, boron, copper, zinc and molybdenum.**

By stressing a complete fertilization program, the Beermann's have brought about some large yield increases.

"In some cases our service has increased corn yields from 15 to 35 bu. an acre," said Mr. Beermann. "Such results cause the farmer to use fertilizer the next year, and it will also

bring in new customers who hear of it."

For their fall application of fertilizer, the firm gets 50¢ an acre. For spring and summer sidedressing the price ranges from 75¢ to \$1 an acre. Farmers may apply the materials but this is only for the more common fertilizers. Where trace elements are added, the work is usually done by the Beermann drivers and equipment. Not only can they do a better job, but they can apply it three times as fast.

The Beermann brothers have merged their two business, selling fertilizer and dehydrated alfalfa under one organization. They are proud of the high quality alfalfa brown in the community, which enables the plant to produce high quality alfalfa pellets. This product is marketed under the "Past-Ur-Like" trademark.

## Alfalfa Aphid Count at Record High in Kansas

MANHATTAN, KANSAS—Kansas has more spotted alfalfa aphids now than it has had this late in the year since records of aphid numbers have been kept, Chris C. Burkhardt, assistant entomologist at Kansas State College, reports.

Recent counts showed as many as 14,000 aphids on five alfalfa plants in northern Kansas and as many as 32,500 on five plants in southern Kansas.

That is considerably more than were ever before found in Kansas this late in the season, Mr. Burkhardt said. He and his associates will continue sampling alfalfa fields for the insects throughout the winter and spring, as they have during the fall.

The tremendous number of aphids this late is a terrific potential for damage in 1959, unless climatic factors between now and spring reduce their numbers, he said.

## LIMESTONE CONFERENCE

COLLEGE STATION, TEXAS—The Texas Agricultural Limestone Assn., in cooperation with the Texas Agricultural Extension Service, is sponsoring the annual Texas Limestone Conference Jan. 9-10 in Texas A&M's Memorial Student Center.

## Best Starts Nematocide Division in California

OAKLAND, CAL.—A new nematocide division has been established within the sales department of the Best Fertilizers Co., at Lathrop, Cal., according to an announcement made by Lowell W. Berry, president of the company.

A. B. Horner has been named division manager, under Dr. W. L. Garman, vice president in charge of sales.

"This step," said Mr. Berry, "is taken in recognition of the growing importance of nematocide warfare and the successful combination of a nematocide with pelleted fertilizers."

Mr. Berry pointed out that Best, in producing homogenous nematocide fertilizers, recognized that many recommended treatments with fumigants were similar in time and placement to those of fertilizer. It was felt that the grower could do an effective dual job by combining the two operations.

The material used in combination with Best pelleted fertilizers was identified by Mr. Berry as dibromo chloropropane which is sold under the brand names of nemagon, fumason, and menfume. Dibromo chloropropane (DBC) has several characteristics which make it especially adaptable to this purpose; it can, it was discovered after research, be absorbed into the fertilizer pellets; it is comparatively stable and acts in the soil for two or three months, Mr. Berry reported. The pesticide can be applied near living plants, he said.



A. B. "Jack" Horner

## CROP OUTPUT

(Continued from page 1)

well above the old champion, 1948, when corn acreage was almost one sixth larger.

Oats acreage was reduced to the lowest level in many years by wet weather in southern parts of the spring oats area and some winter-killing of fall plantings. A record yield per acre, however, still provided an above-average crop. Barley shared the conditions favoring the other small grains and produced a record high yield and production from acreage slightly under that of a year ago.

Sorghum grain appeared to be heading for a smaller year after many growers in the Plains States increased wheat, thus reducing sorghum grain acreage one seventh. But new varieties and ideal growing conditions brought production of a tenth higher than a year earlier. The total result for the four feed grains was production of one tenth more than the previous record set last year.

Oilseed crops shared the fortune of feed grains. The soybean crop had its best year. Acreage made another successive annual expansion, yields reached a new high and production moved up again for the fifth successive year. Cotton acreage was reduced sharply to the smallest total since 1876, but despite some lateness and wet weather in central states, extremely high yields from the irrigated crops in the Southwest as well as other sections set new record per acre yield levels and brought larger production of lint and seed than in 1957. Flaxseed acreage reduction held down the production of this crop to 4% below average although the season was favorable and the per-acre yields were the second highest since 1906.

Forage production in most areas in 1958 was also the largest in many years. Hay yield per acre and total production slightly exceeded former record levels. Silage yields were high, whether of corn, grass or sorghums,

## IMC Starts Lawn, Garden Department

CHICAGO—International Minerals & Chemical Corp. began operation Jan. 1 of a new lawn and garden department in its Plant Food Division.

John D. Zigler, general manager of the division, said the department will concentrate on promotion of a new lawn fertilizer called Thrive, which uses a slow-release feature to provide balanced and "metered" year-round feeding.

The product was market-tested last spring in Rockford, South Bend and Ft. Wayne. It will be introduced this spring to expanded midwestern markets, including the greater Chicago area and Milwaukee.

Jack G. Eisinger, formerly Chicago district manager for the hardware division of Black and Decker, has joined IMC to be sales manager for the new department.

He will head up a sales force which will operate independently of the division's other departments. Other fertilizers to be featured by the new unit include Fertilis and Mello-Green.

## Fertilizer Salesmen's School Set by NPFI for Ohio

WASHINGTON—A fertilizer salesmen's training school, designed to improve sales techniques will be sponsored by the National Plant Food Institute in Columbus, Ohio, on Feb. 4, announced Dr. Russell Coleman, executive vice president of NPFI.

Sales representatives of members as well as non-members of the Institute with operations in Ohio are being invited to attend the school.

Institute staff members, with some additional authorities from outside organizations will present the subject matter for the school. Subjects to be presented at the school will include:

1. What's the Customer Like?
2. Why Does the Customer Need Our Product?
3. What Sales Tools are Available?
4. How to Sell Fertilizers More Effectively.

## J. Basil Bowers in New Stauffer Post

NEW YORK—J. Basil Bowers has joined the sales development department, Agricultural Chemicals Division, Stauffer Chemical Co. Prior to assuming his new position, Mr. Bowers was head of the plant pathology department at Stauffer's agricultural research laboratories in Mountain View, Cal.

Mr. Bowers will continue to be headquartered at Mountain View for the present. He will be responsible for the introduction of new agricultural chemicals in the western states, including advertising, promotion and technical liaison. A graduate of the University of California in plant pathology and biochemistry, Mr. Bowers joined Stauffer in 1952.

## Soil Sampling Up

BLACKSBURG, VA.—Virginia farmers sent in 17% more soil samples during the year ending Nov. 30, than they did in the corresponding period in 1957, according to a summary released by W. W. Lewis, agronomist at Virginia Polytechnic Institute Agricultural Extension Service. A total of 53,283 soil samples were received in VPI soil sampling laboratories in 1958, as compared to 45,580 in 1957. The June to December period in 1958 was particularly busy, Mr. Lewis said, with a 65% increase over the corresponding period in 1957. Six counties sent in over 1,000 samples. They are: Nansemond, 1,534; Culpeper, 1,333; Southhampton, 1,223; Frederick, 1,218; Augusta, 1,156; and Pittsylvania, 1,030.

## REGULATIONS DRAFTED

BOISE, IDAHO—The state Insecticide Coordinating Committee has met here to draft proposed legislation aimed at regulating the use of insecticides, according to Leland Fife, chairman and state director of plant industry. One proposal consisted of amendments to the present spraying and dusting law, designed to give more protection to pollinating insects.



## RESEARCHERS REPORT:

# Tree Fertilization May Soon Become Modern Forestry Tool

WASHINGTON—Fertilizing trees may soon become an important tool of modern forestry—or tree farming—ranking in some situations with seeding, planting, weeding, thinning, pruning, selecting, breeding and other forestry practices, according to T. E. Maki, head of the forest management department at North Carolina State College School of Forestry.

"Efficient forest production, like production of agricultural crops, comes from management applied not only to the growing plants but to the soil itself," Mr. Maki points out in a special handbook on forest fertilization, recently issued by the American Potash Institute.

Mr. Maki reports fertilizer usage is well established in forest nurseries, though frequently too meager to offset the annual nutrient drain from the soil. Nursery soils usually require more fertilizer than farm crops, such as cotton and corn.

The dry weight of an annual crop of southern pine seedlings may well exceed 8 or 10 tons per acre, Mr. Maki explains. And since almost the entire crop is removed, very little crop residues are left in the soil. Such seedling crops remove up to 250 lb. of elemental nitrogen plus about 150 lb. potash and possibly a similar amount of phosphorus per acre.

Fertilizer usage has shown definite stimulation of forest tree seed production in the few instances where it has been tried. And it has definitely improved quality of nursery-grown seedlings. But much basic and applied research must still be done to formulate efficient prescriptions for seed orchards and to produce consistently high quality, husky, drouth-hardy planting stock in forest nurseries, Mr. Maki said.

Fertilizing Christmas trees looks promising. It is now a multi-million dollar industry, producing over 40 million trees. An investment of one or two pounds of fertilizer per tree may mean one or two feet added height in 5 to 8 years, plus a more healthy appearance, the forest scientist points out.

Stimulating gum flow in naval stores operations also looks promising. "We already know that fertilizing will stimulate gum production," Mr. Maki explains, "so it seems reasonable to predict that when high-yielding strains of 'turpentine pines' are developed, fertilization to boost gum yields still more will become standard practice."

Fertilizers might be used to in-

crease the effectiveness of plantings for erosion control, Mr. Maki shows, as well as to grow commercial timber crops on "beat up" lands close enough to mills and plants to cut wood transportation costs.

Fertilization may pay, also, in getting seedlings off to a vigorous start on low-fertility sites, he says. And fertilizing established stands on some soil types may become economically sound when research answers questions now facing modern forestry.

Mr. Maki's full report is available through Forest Fertilization Handbook, News Service, American Potash Institute, 1102 16th St., N.W., Washington, D.C.

Meanwhile, Donald P. White, Michigan State University forest scientist, writing in *Better Crops with Plant Food*, a publication of the American Potash Institute, said that more basic research in tree nutrition is the key to future plant food needs of American forests.

Early attempts to stimulate forest growth with fertilizer often gave inconclusive or negative results. This was usually due to poor choice of fertilizer materials, inadequate application rates, no experimental controls and inadequate record keeping, Mr. White says.

An exception to these earlier results was the influence of potash on stagnating pine and spruce plantations in the upper Hudson Valley of New York. There 200 lb. of potash per acre increased annual height-growth of red pine from 46 to 104% over unfertilized plots.

"Most progressive tree nursery managers, today, realize what a drain tree crops make on nursery soil fertility," Mr. White reports. "Most of them now use balanced fertilizers based on soil and plant tests and in connection with cover crops and other soil management techniques."

"Hardwood plantations have always been the forester's riddle. They are generally more demanding in soil requirements than evergreens and respond more vigorously to soil amendments. And such valuable species as tulip, poplar, ash and hybrid poplar respond dramatically to higher soil fertility."

Fertilization at planting can be beneficial, Mr. White reports, with such species as locust, hybrid poplar, tulip, ash and maple benefiting from an ounce or two of complete fertilizer placed in the planting hole well below the roots.

Although fertilizing mature or second growth forest is not usually recommended, Mr. White says, "Frankly, modern forestry has never adequately tested the maximum growth potential of natural forest soils under optimum fertility levels by natural or artificial means. We just don't know what these optimum levels are—yet."

Christmas tree plantations may be improved by fertilizer, Mr. White reports. White spruce on potash deficient soils have been significantly improved in quality by 300 lb. per acre of muriate of potash. And off-color spruce on low-fertility sites has responded well to a half pound of high analysis complete fertilizer applied in a ring around each tree in the spring.

The yield and quality of many accessory forest crops are influenced by the way fertilization affects the tree's physiology, Mr. White reports. This includes gum yield of slash pines, seed production in southern pine, oak and sugar pine and maple sap yields.



A. J. Dirksen

E. M. Kolb

## Two American Potash Appointments Announced

LOS ANGELES—Two appointments in American Potash & Chemical Corp.'s eastern sales department were announced at the firm's Los Angeles headquarters by William J. F. Francis, vice president in charge of sales.

A. J. Dirksen, formerly general sales manager of the industrial chemicals division, was appointed to eastern general sales manager to be in charge of all eastern area sales. Mr. Dirksen joined AP&CC in 1953 as director of the market development department. Prior to this, he was with Phillips Petroleum Corp.

E. M. Kolb, formerly general sales manager of the heavy chemicals division, was named assistant to the vice president and will continue to be in charge of the company's potash activities. In line with this, Mr. Kolb was elected to the board of directors of American Potash Institute in addition to his duties on the board of Potash Export Assn.

The appointments were effective Jan. 1, 1959, and both men will continue to operate from the company's New York offices.

## SEED SHORT COURSE

CORVALLIS, ORE.—A seed processors' short course is scheduled on the Oregon State College campus, Feb. 5-7, J. E. Harmond, chairman, announced. Sessions, to be held in the OSC home economic auditorium, will start at 8:15 a.m.

## No Need for Spruce Budworm Spraying in 1959, Forester Says

PORTLAND, ORE.—"There is no need for a spruce budworm spraying program in Oregon or Washington during 1959," said E. L. Kolbe, president of the Northwest Pest Action Council and chief forester for the Western Pine Assn.

Mr. Kolbe said the outlook in the fight against forest insect pests is "exceptionally good," and that insect damage in the Pacific Northwest timberlands is down.

"Parasites and other natural enemies are taking over the job of controlling insect populations," he said.

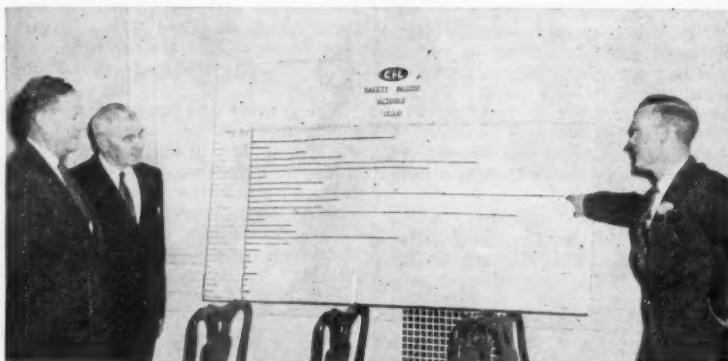
Large-scale spruce budworm spraying programs of the past 10 years held the line until natural controls were restored.

"Millions of timber acres were saved by the spraying programs," Mr. Kolbe pointed out. "If this effort had not been made, area's economy may have suffered a catastrophe."

The Pest Action Council will be able to devote more time to reviewing other forestry problems involving mistletoe infestations, animal damage, slow acting root rots and others, he said.

## Join Aircraft Group

FRESNO, CAL.—Seven firms have joined the Agricultural Aircraft Association of California as members. They are Tom Bowles Farm Service, Live Oak, represented by Tom Bowles; the Frank Sue Farm Air Service, represented by Frank Sue, also of Live Oak; the Varney Air Industries, Inc., Ray H. Varney, Willows; Frontier Airways, represented by Clayton Curtis, Visalia; L. P. Dusters, Fremont, represented by Rolad H. Lawrence, Jr.; Spain-Air, by Bill, Ara Lee, and Jesse Spain of Dos Palos; and Bob's Flying Service, Inc., Indio, Robert Willis, president. A new sustaining member is Colusa Glenn Supply Co., represented by Russel Waterbury of Maxwell.



**LONGEST IN THE COMPANY**—John Cree (right), foreman at the Halifax, Nova Scotia, fertilizer plant of Canadian Industries, Ltd., points with pride at the company's safety chart which shows that his plant has the longest safety record of any of C-I-L's 25 plants across Canada. The plant recently achieved a safety record of more than 15 years (5,580 calendar days) without a lost-time accident which won for it its fourth successive C-I-L prize, highest award under the company's no-accident record plan. At left is L. V. Clegg, production manager of the company's agricultural chemicals division and A. B. Tolmie, manager of the Halifax fertilizer plant.

## Firm Wins Award for 15 No-Accident Years

HALIFAX, NOVA SCOTIA—Employees of the Halifax fertilizer plant of Canadian Industries, Ltd., celebrated setting a safety record of more than 15 years without a lost-time accident at a recent dinner in the Nova Scotian Hotel.

This achievement won for them their fourth successive C-I-L prize, highest award under the company's no-accident record plan.

Congratulating the employees on their consistent observance of safety practices, L. V. Clegg, production manager of C-I-L's agricultural chemicals division, Montreal, said

their achievement represented 5,580 days without a lost-time accident (from Aug. 17, 1943 to Nov. 26, 1958) and was the longest record of any of the company's 25 plants across Canada and one of the longest in industry anywhere.

"While C-I-L has been advocating 'safety first' for many years, and has built up one of the best safety records on the continent," Mr. Clegg said, "there are other 'firsts' which all employees should consider along with safety. They are 'quality first' and 'service first.' I am happy to say that employees of our Halifax fertilizer plant have given all these 'firsts' their utmost attention."

Following the dinner, employees were presented with individual awards by Mr. Clegg.

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## Nematode Found as Plant Virus Carrier

WASHINGTON—A dagger nematode known to be a destructive plant parasite has been caught in the new role of plant virus carrier. In U.S. Department of Agriculture-state studies, the nematode *Xiphinema index* transmitted fanleaf virus of grapevine from infected to healthy plants.

This discovery makes other similar plant parasitic nematodes suspect, USDA says. Further tests will be made to determine whether these tiny eelworms spread other soilborne viruses.

No nematode had previously been proved a carrier of plant viruses. But W. B. Hewitt, plant pathologist, and D. J. Raski, nematologist, at the California Agricultural Experiment Station, Davis, linked this dagger nematode to the slow spread of fanleaf from infected to adjacent healthy vines. Experiments that followed proved Mr. Hewitt and Mr. Raski right. They worked with plant pathologist, A. C. Goheen, Agricultural Research Service, to identify the carrier.

In one experiment, healthy grapevines and fanleaf-diseased vines were planted in the same clay pot. The healthy vines—infested with this dagger nematode from the root zone of disease-free grapevines—developed fanleaf in 10 months. In another study, similar results were obtained using dagger nematodes from a fig tree's root zone. All control vines remained healthy.

Discovery that the dagger nematode transmits the fanleaf virus suggests that control of this nematode in vineyards will prevent spread of the virus, USDA says.

## Southern Weed Conference Program Plans Announced

WASHINGTON—The complete program for the 12th Annual Southern Weed Conference was released here by Richard Behrens, president of the sponsoring group.

All phases of herbicide use and application problems will be discussed at this meeting. It is expected that leading authorities from southern land grant colleges and the U.S. Department of Agriculture, representatives of chemical and farm equipment manufacturers and farm operators from all over the South will attend.

Officers of the Southern Weed Conference are: Mr. Behrens of the University of Minnesota (formerly with USDA at College Station, Texas), president; V. S. Searcy of Alabama Polytechnic Institute, Auburn, Ala., vice president; and W. K. Porter of Louisiana Agricultural Experiment Station, Baton Rouge, La., secretary-treasurer.

The conference will be held at the Washington-Youree and Captain Shreve hotels in Shreveport, La., Jan. 21-23.

## Delaware Chemical Employment Drops

WILMINGTON, DEL. — Employment in chemical manufacturing declined in Delaware during November. The new level was estimated at 27,700 as compared with 27,900 in October, according to the monthly report of the Delaware Unemployment Compensation Commission.

The figure remained below November a year ago when the number of workers was 28,900.

Average weekly earnings of the production worker increased between October and November from \$117.41 to \$120.77. An increase was noted in average hourly earnings, \$2.95 in October and \$2.96 in November, and a longer work week from 39.8 hours to 40.8.

## 1958 Ragweed Control Operation Covers 10,200 Acres in Oregon

SALEM, ORE.—Ragweed on 10,200 acres of land was sprayed in 1958 under the western Oregon control program established in 1957 by the legislature, reports Robert Steward, director of Oregon State Department of Agriculture.

The 1958 operation covered infestations in 10 counties. No ragweed was found in the other eight counties in the control region. Yamhill and Multnomah are new counties in which ragweed was found in 1958.

The control program is conducted at state expense on private lands, with the state department of agriculture in charge. George H. Moose of the department's plant division staff is supervisor. He reports nearly 3,000 quarts of weed

killers and 1,619 man hours of actual spray time went into the 1958 operation.

The actual spray season in 1958 opened June 5 and extended through Sept. 25. In 1957, spray equipment was operated from Aug. 7 through Sept. 27.

Mr. Steward calls attention to these other highlights from the department's 1958 ragweed operations:

Educational programs in the winter and early spring alerted 1,600 adults and FFA youths to watch for and report ragweed infestations. Their help was of material assistance throughout the season.

Variations in cropping practices within a given area necessitated much "doubling back" to treat all infestations in all areas at the period of optimum growth.

To cope with the large infestation in Josephine County, a second sprayer was purchased in late July and mounted on a jeep borrowed from the

CROPLIFE, Jan. 5, 1959—19

animal division. Two additional operators were hired and this emergency equipment began continuous operation in Josephine County Aug. 11.

Three contracts were let to supplement the spraying by the department equipment. Two contract sprayers (commercial) operated in Josephine County. The third contract was with Jackson County, for all control work on lands there.

In Marion County, the department contracted for hand labor to pull ragweed in six acres of strawberries.

The spray used was 1 lb. of 2,4-D acid equivalent per acre until July 25 when the dosage was doubled, plus spreader. The only exception occurred late in the season (Sept. 17) when amino triazole (120 lb. plus 50 gallons of weedall) was applied to 18 acres in an attempt to arrest seed germination.

Surveys were conducted in many parts of western Oregon concurrently with the control operations.



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Grade	New England	Middle Atlantic	South Atlantic	East North Central	West North Central	East South Central	West South Central	Mountain	Pacific	Continental United States
5-10-10	48	667	571	110	1	34	9	---	4	1,444
4-12-12	---	20	814	2	1/	188	1/	---	---	1,024
5-20-20	---	1	1	591	196	18	13	1/	---	820
4-16-16	---	1	1	765	19	5	1/	---	---	791
10-10-10	63	172	66	256	60	49	5	1	30	702
3-12-12	1/	26	58	530	34	38	15	---	---	701
12-12-12	5	17	3	397	223	12	42	1/	1	700
3-9-9	---	1/	490	1/	---	---	---	---	---	490
5-10-5	6	177	102	12	5	77	86	1/	---	465
6-12-12	2	35	20	28	10	287	4	---	---	386
5-10-15	1/	152	51	10	---	121	---	---	---	334
4-10-7	---	---	34	---	---	273	---	---	---	307
2-12-12	---	25	271	---	---	3	---	---	---	299
0-20-20	18	68	4	128	34	22	10	---	---	284
6-8-8	4	1/	45	1/	---	178	11	---	---	238
Total	146	1,361	2,531	2,829	582	1,305	195	1	35	8,985
Percent of regional total	39	79	55	86	49	73	31	1	9	64

1/ Less than 500 tons.

## FERTILIZER CONSUMPTION

(Continued from page 1)

bined totals of these 14 were nearly the same in both years (8,651,000 tons in 1957-58 and 8,703,027 tons in 1956-57) and represented over 60% of the consumption in each year.

In all regions except the Mountain and Pacific, the tonnage of the 15 grades represented over 30% of the total tonnage of mixed fertilizers consumed in the respective regions. The trend in the Mountain and Pacific regions is to use grades having generally less potash than shown by the average of these 15 grades.

In 32 areas consumption of materials for direct application was 463,000 tons higher and in 19 areas 363,000 tons lower than in 1956-57. Use of materials increased in all states of the New England and East North Central regions and most of the states in the West North Central, Mountain and Pacific regions. Decreases were in most of the southeastern and south central states and the territories.

Chemical nitrogen products were the only class of materials that showed an increase in 1957-58. The use of anhydrous ammonia increased 124,000 tons, nitrogen solutions 71,000 tons and ammonia sulfate 57,000 tons.

The consumption of anhydrous ammonia and nitrogen solutions increased in all regions where used except the East South Central, while that of ammonium sulfate increased in all regions except the territories. The use of other chemical nitrogen products was generally lower in 1957-58 than in 1956-57.

The total use of natural organic materials decreased 12,000 tons, but the consumption of dried manures increased 3,000 tons.

While the consumption of all phosphate materials decreased 5,000 tons, the use of ammonium phosphates and phosphate rock (including colloidal phosphate) increased 74,000 and 11,000 tons, respectively. The use of basic slag and normal and concentrated superphosphates decreased 8,000, 81,000 and 5,000 tons, respectively. The increase in ammonium phosphates and decrease in the other phosphate materials were general throughout all regions.

The consumption of potash materials decreased 26,000 tons and was lower in each of the regions.

The total quantity of primary nutrients contained in all fertilizers was 6,465,000 tons. This was 88,000 tons (1.4%) more than in 1956-57. The total for 1957-58 comprised 2,264,000 tons of nitrogen, 2,280,000 tons of available  $P_2O_5$ , and 1,921,000 tons of  $K_2O$ .

These quantities represent an increase of 129,000 tons (6%) for nitrogen and decreases of 24,000 tons (1%) for available  $P_2O_5$  and 17,000 tons (0.9%) for  $K_2O$ . Although the total quantity of fertilizers carrying primary nutrients was 359,000 tons below consumption in the preceding year, the lower tonnage of fertilizers contained 88,000 tons more primary nutrients than the larger tonnage in 1956-57. This increase was due to the greater use of the chemical nitrogen materials.

The total consumption of primary nutrients contained in mixed fertilizers amounted to 4,313,000 tons, comprising 848,000 tons of nitrogen, 1,789,000 tons of available  $P_2O_5$  and 1,676,000 tons of  $K_2O$ . These quantities represent 4,000 tons (0.5%) more nitrogen, 28,000 tons (1.5%)

less of available  $P_2O_5$ , and 6,000 tons (0.4%) less of  $K_2O$ .

Materials used for direct application contained 1,416,000 tons of nitrogen, 491,000 tons of available  $P_2O_5$  and 245,000 tons of  $K_2O$ . These quantities represented increases of 125,000 tons (9.7%) for nitrogen, 4,000 tons (0.8%) for available  $P_2O_5$ , and a decrease of 11,000 tons (4.3%) for  $K_2O$ .

The weighted average of the primary nutrients contained in mixed fertilizers was for nitrogen, 5.95%; for available  $P_2O_5$ , 12.55%; for  $K_2O$ , 11.76%; and for the total of those nutrients, 30.26%. The corresponding values in the preceding year were 5.74, 12.36, 11.44, and 29.54%. The proportionate increase was highest for nitrogen and lowest for  $P_2O_5$ .

1957-58 Fertilizer Consumption, Preliminary<sup>1</sup>

State and region	Mixtures 1,000 tons	Materials <sup>2/</sup> 1,000 tons	Total	
			Consumption 1,000 tons	Change from year ended June 30, 1957 1,000 tons
Maine	171	11	182	10
New Hampshire	15	5	20	1
Vermont	42	17	59	4
Massachusetts	69	18	87	1/
Rhode Island	16	2	18	3
Connecticut	66	23	89	4
New England	379	76	455	20
New York	522	81	603	25
New Jersey	222	24	246	-23
Pennsylvania	570	70	640	6
Delaware	74	4	78	-10
District of Columbia	3	1	4	1
Maryland	267	16	283	-9
West Virginia	64	9	73	-9
Middle Atlantic	1,722	205	1,927	-19
Virginia	610	98	708	-64
North Carolina	1,162	302	1,464	-103
South Carolina	526	207	733	-85
Georgia	936	256	1,192	-46
Florida	1,296	165	1,461	-16
South Atlantic	4,586	1,028	5,614	-314
Ohio	950	103	1,053	18
Indiana	856	225	1,081	-6
Illinois	231	681	1,422	52
Michigan	554	61	615	-22
Wisconsin	394	42	436	10
East North Central	3,285	1,322	4,607	52
Minnesota	323	122	445	19
Iowa	332	202	534	69
Missouri	402	354	756	-46
North Dakota	30	76	106	25
South Dakota	11	23	34	9
Nebraska	30	202	232	63
Kansas	63	126	191	-21
West North Central	1,191	1,107	2,298	114
Kentucky	431	92	523	-19
Tennessee	400	92	492	-53
Alabama	693	269	962	-78
Mississippi	254	374	628	-118
East South Central	1,778	827	2,605	-268
Arkansas	139	151	290	-37
Louisiana	148	129	277	-12
Oklahoma	57	50	107	-1
Texas	285	381	667	72
West South Central	630	711	1,341	22
Montana	3	36	39	-5
Idaho	12	92	104	18
Wyoming	2	10	12	2
Colorado	15	66	81	22
New Mexico	2	37	39	1
Arizona	32	172	204	26
Utah	6	26	32	-1
Nevada	3	19	22	15
Mountain	75	458	533	78
Washington	53	192	245	60
Oregon	26	165	191	-27
California	302	1,871	2,173	45
Pacific	381	2,228	2,609	78
Continental U. S.	14,027	7,962	21,989	-235
Hawaii	46	90	136	-58
Puerto Rico	179	54	233	-58
Territories	225	144	369	-116
Total: 1957-58	14,252	8,106	22,358	-351
1956-57	14,703	8,006	22,709	0
1955-56	14,776	7,418	22,194	-515

1/ Includes fertilizers distributed by Government agencies. Due to rounding, column or cross totals may not balance.

2/ Includes: ground phosphate rock and colloidal phosphate, basic slag, secondary and trace nutrient materials, as borax, metallic salts, sulfur, gypsum, etc. used as separate materials. Does not include fixing materials or the quantity of materials used for manufacture of commercial mixtures.

3/ Less than 500 tons.

4/ Includes an estimated 260,000 tons of dried manures.

5/ Materials included not guaranteed to contain N,  $P_2O_5$ , or  $K_2O$  totaled 940,000 tons in 1957-58, 943,243 tons in 1956-57, and 789,605 tons in 1955-56.

Investment Sought  
For Planned Brazil  
Fertilizer Plant

WASHINGTON — Capital investment for the establishment of a fertilizer plant in Brazil is being sought by the firm, Nitrogenio S.A. Industria Brasileira de Produtos uimicos e Fertilizantes, of Sao Paulo. A total investment of approximately \$15 million will be required for the entire project. The potential investor is offered an equal share in the enterprise.

The firm intends to manufacture nitrogenous fertilizers using natural gas as the basic raw material. The proposed plant is expected to produce daily approximately 120 tons of ammonia, 150 tons of nitric acid, 190 tons of nitro-chalk and 150 tons of urea.

The investment capital, according to the firm, will be utilized for the purchase and installation of machinery and equipment, working capital, and for the initial operation of the plant. An import license has been obtained for the purchase of necessary machinery and equipment.

A prospectus report of the company, which includes comprehensive technical, market and cost data on the project, is available for review on loan from the Investment Development Division, Bureau of Foreign Commerce, U.S. Department of Commerce, Washington 25, D.C.

Interested firms, particularly chemical manufacturers, also are invited to correspond with Dr. Bernard Pajiste, Director-Superintendent, Nitrogenio S.A., Rua Xavier de Toledo 210, 5° Andar, Sao Paulo, Brazil.

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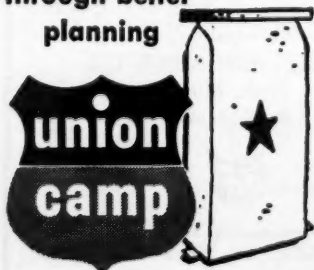
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# Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Midwestern states.

## Significant Statistics . . .

### Carelessness, Improper Storage, Unlabeled Bottles Cause Most Pesticide Accidents

**H**OW SERIOUS and how extensive are injuries suffered from pesticides and fertilizers, actually? To listen to the accusations of some persons who seem somewhat blinded by prejudice against these materials, chemicals used on the farm are responsible for a major portion of human ills. Obviously a true picture cannot be gained by asking them about the situation.

Who then might furnish accurate and unbiased information on the subject? After all the tumult and shouting heard through much of 1958, one wonders—is a true appraisal of the situation possible to obtain?

Robert Z. Rollins, chief of the bureau of chemistry of the California department of agriculture, has prepared some statistical data that brings the situation into focus and lends perspective to the role played by pesticides as a contributor to injury and death. California is one of the heaviest users of both pesticides and fertilizers and its statistics are significant.

Actually, this single state uses one-fifth of the nation's pesticides and accounts for a third of the country's agricultural pest control business. With this fact as a background, it is interesting to compare the rate of accidental poisoning cases in California with that in the U.S. as a whole.

Mr. Rollins points out some interesting facts which do not necessarily appear on the surface of statistical figures. Whereas in a recent year accidental poisonings by solids and liquids of all kinds accounted for 1,431 deaths in the U.S., some 248 deaths in California were caused by the same means. "Although California has approximately 1/14th of the nation's population, it accounts for 1/7th of the deaths due to accidental poisoning by solids and liquids," Mr. Rollins observes. This makes the death rate in California twice as high as the national average.

Bad as this statistic sounds on the surface, it does not concern agriculture and the chemicals used on farms. Of the 248 deaths from acute accidental poisoning by solids and liquids, drugs accounted for 197; of which barbiturates were responsible for 120, nearly a third of the nation's total deaths from this cause. Aspirin caused 14 deaths in California and arsenic 13. All other solids and liquids, 38. And pesticides? Approximately 12 deaths resulted from this cause.

"These statistics give some background to show the relative importance of pesticides compared with other types of materials as causes of death in California and the U.S.," Mr. Rollins went on. Actually, it means that about one person out of a million dies from a pesticide. Regrettable as these deaths are, they should be held in proper perspective with other factors. Motor vehicles kill more people in a single day than pesticides do in a year. Drugs kill at least five times as many people as pesticides do and aspirin alone kills almost as many as pesticides. "Statistically speaking, you are twice as likely to die from being hit by lightning or from falling off a stepladder as you are from a pesticide," the California official observes.

Under what circumstances do pesticide-caused deaths and injuries occur? Are innocent residents killed by mass spray projects? Do people succumb to eating food poisoned by applications of pesticidal products? Are entire communities endangered by agricultural pesticide application? Not according to Mr. Rollins whose department keeps

accurate records of accidents involving pesticides.

Most accidents recorded have to do with just plain carelessness and thoughtlessness. Pesticides put in unlabeled cans or bottles or jars; failure of workers handling toxicants to observe rules of cleanliness and ordinary caution; pesticides left within easy reach of children and pets. These factors characterize most of the accidents recorded.

Here are brief mentions of some of the accidents reported in California during 1958. The six deaths included two children, one of whom drank sodium arsenite weed killer that had been left carelessly underneath a house. Another small boy swallowed lindane tablets intended for use in a vaporizer.

Another death was that of a woman who ate an arsenical ant poison under circumstances that suggest suicide, but the death was officially recorded as "accidental poisoning."

A farm laborer died from effects of parathion dust he was applying with a hand duster.

Another man drank sodium arsenate weed killer which had been stored in an unlabeled bottle similar to one containing wine. He apparently picked up the wrong one.

Cotton defoliant was involved in one of the deaths when a laborer continued for several days to wear the same contaminated clothes, and once plunged his bare arm into the concentrated material to retrieve a spigot that had fallen into the drum.

At least eight persons used pesticides to commit suicide during 1958, Mr. Rollins reported.

The past year was a bad one from a public relations standpoint so far as pesticides were involved in parts of the country. Protests that aerial spray projects were doing untold damage proved to be greatly exaggerated and an actual court trial was held to determine the validity of complaints. Even though the judge decided that mass spray projects are justifiable and that the government has a right to conduct them, the pesticide industry may be sure that the people complaining so bitterly are not about to change their minds. They and their counterparts in other areas will make their complaint heard in 1959 and probably in years to come.

Responsible people in the trade have never denied that pesticides are toxic and that if mishandled can cause damage. The trick is to keep mishaps in their proper perspective . . . to note that not many injuries come as the result of intended use of the material and, even then, in relatively small numbers.

Mr. Rollins' report is sobering, but it does show that if a complete picture is available of factors causing trouble, state officials and industry people will be in a better position to improve labeling if necessary and to handle materials in the field to reduce the number and severity of such accidents in the future.

## Our Sixth Year Begins

**C**ROPLIFE begins its sixth year of operation with this issue. At the risk of being redundant, we want to reiterate once more our gratefulness to hundreds of friends and business associates across the nation for their aid, co-operation and encouragement in the months and years past. We look forward, of course, to 1959 and its challenges with confidence and eagerness.



Croplife's Home Office

## Croplife



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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# MEETING MEMOS

Feb. 4—Fertilizer Salesmen's Training School, National Plant Food Institute, Columbus, Ohio.

Feb. 13-18—Maryland Agricultural Pesticides Conferences; at Salisbury State Teachers College Feb. 13, La Plata Feb. 16, and Frederick Feb. 18.

Meeting Memos listed above are being listed in this department this week for the first time.

Jan. 5-6—Eighth Annual Oregon Agricultural Chemical Applicators' Conference, Oregon State College campus, Corvallis, Ore.

Jan. 6-7—Colorado Fertilizer Conference, seventh annual meeting, Student Union Building, Colorado State University, Ft. Collins, Colo.

Jan. 6-7—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 7-8—Fertilizer Short Course, Iowa State College, Ames.

Jan. 7-8—Fifth Annual Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 7-9—Thirteenth Annual Northeastern Weed Control Conference, Hotel New Yorker, New York.

Jan. 8-9—Fifth Annual Mississippi Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 9—National Plant Food Institute, Northeast Industry Advisory Committee meeting, Biltmore Hotel, New York City.

Jan. 12-13—Ohio Pesticide Institute, annual winter meeting, Neil House, Columbus, Ohio. J. D. Wilson, Secretary, Agricultural Experiment Station, Wooster, Ohio.

Jan. 13—Pesticide meeting to discuss current recommendations, Rm. 232, Agricultural Experiment Station Building, University of Kentucky, Lexington.

Jan. 13-14—Georgia Plant Food Educational Society, Annual Meeting, Georgia Center for Continuing Education, Athens, Ga., J. Fielding Reed, 710 Mortgage Guarantee Bldg., Atlanta, secretary-treasurer.

Jan. 13-15—Ninth Annual Fertilizer Dealers Training Conference, Pershing Municipal Auditorium, Lincoln, Neb.

Jan. 20-22—First Indiana Pesticide Conference, Memorial Center, Purdue University, Lafayette, Ind.

Jan. 20-22—California Weed Conference, Miramar Hotel, Santa Barbara, Cal.

Jan. 21—Second Annual Arizona Fer-

tilizer Conference, University of Arizona, Tucson, Ariz.

Jan. 21-22—Indiana-Ohio Aerial Applicators Conference, Memorial Center, Purdue University, Lafayette, Ind.

Jan. 21-23—Southern Weed Conference, 12th annual meeting, Washington-Youree and Captain Shreve Hotels, Shreveport, La., Dr. Walter K. Porter, Jr., secretary-treasurer.

Jan. 21-22—Northwest Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore.; George Kitzmiller, Pacific Cooperatives, Portland, conference chairman.

Jan. 21-23—Western Cooperative Spray Project, Benson and Imperial Hotels, Portland, Ore.

Jan. 22—Seventh Annual Fertilizer Dealers Day, Oregon State College, Corvallis, Ore.

Jan. 22-24—Agricultural Aircraft Assn., Senator Hotel, Sacramento, Cal.; Wanda Branstetter, Chandler Field, Fresno, Cal., Executive Secretary.

Jan. 27-28—Insecticide-Fungicide Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Jan. 27-28—Nematology Workshop, Portland, Ore., sponsored by Shell Chemical Corp.

Jan. 27-28—Soil Science Society of North Carolina, Williams Hall, North Carolina State College, Raleigh.

Jan. 28-29—Illinois Custom Spray Operators' Training School, 11th annual meeting, University of Illinois, Urbana.

Jan. 29—South Dakota Fertilizer Dealer Short Course, South Dakota State College, Brookings, S.D.

Jan. 29-30—Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver. D. E. Garrison, Box 623, Greeley, Colo., secretary.

Feb. 9-10—National Cotton Council, 21st annual meeting, Dinkler Plaza Hotel, Atlanta, Ga.

Feb. 10-12—Agricultural Chemicals Conference, sixth annual meeting, Texas Technological College, Lubbock, Texas.

Feb. 12-13—Midwestern Agronomists-Fertilizer Industry Representatives, 11th annual meeting, Edgewater Beach Hotel, Chicago, Ill., sponsored by National Plant Food Institute.

Feb. 13—National Safety Council, executive committee of the fertilizer section, winter meeting, Heart of Atlanta Motel, Atlanta, Ga.

Feb. 18-20—Midwestern Chapter of the National Shade Tree Conference, 14th annual meeting, LaSalle

Hotel, Chicago, Noel B. Wysong, secretary.

Feb. 24-25—Alabama Pest Control Conference, Alabama Polytechnic Institute, W. G. Eden, Secretary-Treasurer, Alabama Association for Control of Economic Pests, Alabama Polytechnic Institute, Auburn, Ala.

March 4-5—Annual Weed and Insect Conference, Fonner Park, Grand Island, Neb.

March 17—Western Agricultural Chemicals Assn. spring meeting, Hotel Miramar, Santa Barbara, Cal. C. O. Barnard, executive secretary.

June 9-10—Seventeenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Velda Rose Motel, Hot Springs, Ark.; Bruce Poundstone, University of Kentucky, Lexington, Ky., secretary-treasurer.

June 14-17—National Plant Food Institute, Annual Convention, the Greenbrier, White Sulphur Springs, W. Va.

July 7-9—Pacific Northwest Plant Food Assn., 10th Annual Regional Fertilizer Conference, Tacoma, Wash.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

## Illinois Leads Nation In Soil Samples

URBANA, ILL.—Illinois farmers tested more than one-third of all soil samples tested in the nation during 1957, according to a U.S. Department of Agriculture report published in the latest issue of Plant Food Review. A total of 662,000 samples was tested in Illinois soil testing laboratories. Wisconsin ranked second with 175,-

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4 5 6 7 8 9 10	8 9 10 11 12 13 14	8 9 10 11 12 13 14	5 6 7 8 9 10 11
11 12 13 14 15 16 17	15 16 17 18 19 20 21	15 16 17 18 19 20 21	12 13 14 15 16 17 18
18 19 20 21 22 23 24	22 23 24 25 26 27 28	22 23 24 25 26 27 28	19 20 21 22 23 24 25
25 26 27 28 29 30 31		29 30 31	26 27 28 29 30
MAY	JUNE	JULY	AUGUST
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3	1 2 3 4 5 6	1 2 3 4	1
3 4 5 6 7 8 9	7 8 9 10 11 12 13	5 6 7 8 9 10 11	2 3 4 5 6 7 8
10 11 12 13 14 15 16	14 15 16 17 18 19 20	12 13 14 15 16 17 18	9 10 11 12 13 14 15
17 18 19 20 21 22 23	21 22 23 24 25 26 27	19 20 21 22 23 24 25	16 17 18 19 20 21 22
24 25 26 27 28 29 30	28 29 30	26 27 28 29 30 31	23 24 25 26 27 28 29
31			30 31
SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5	1 2 3	1 2 3 4 5 6 7	1 2 3 4 5
6 7 8 9 10 11 12	4 5 6 7 8 9 10	8 9 10 11 12 13 14	6 7 8 9 10 11 12
13 14 15 16 17 18 19	12 13 14 15 16 17	15 16 17 18 19 20 21	13 14 15 16 17 18 19
20 21 22 23 24 25 26	18 19 20 21 22 23 24	22 23 24 25 26 27 28	20 21 22 23 24 25 26
27 28 29 30	25 26 27 28 29 30 31	29 30	27 28 29 30 31

# Here it is!



## A BIG "PRIZE PACKAGE" FOR EVERY ELEPHANT BRAND DEALER...

**Your Customers will be Pre-Sold on Elephant Brand by the Biggest Advertising and Sales Promotion Campaign ever undertaken**

To help you sell more Elephant Brand Fertilizer in 1959 than ever before. The biggest advertising campaign ever undertaken will pre-sell every farmer, every prospective customer on Elephant Brand. This means *your* customers, the farmers in *your* neighborhood!

### Sales Message Repeated Thousands of Times

Your customers will read about Elephant Brand in their local newspaper and in their favourite farm journals. They'll be reminded of Elephant Brand by highway signs between your store and their farms. Five days a week they'll listen to the new Elephant Brand radio program "Questions And Answers" and hear many additional hard-selling radio spots.

Every Elephant Brand dealer will feel the impact of this all-out Elephant Brand advertising campaign. Plan to take full advantage of it in your sales program.

### A Million Dealer Aids

Over a million dealer aid items will add extra weight at the dealer's store with "give-away" items, such as book matches, scratch pads, notebooks and a new, enlarged Ready Reckoner — all designed to build customer goodwill. New pamphlets on high analysis and high water solubility will be displayed in a colourful new pamphlet dispenser. A sparkling new window banner, decals and an Elephant Brand Wall Thermometer will identify the Elephant Brand dealer's store.

### Help for your own Ad Program

The new Elephant Brand Dealer Mat Service Book, containing a wide selection of mats, is designed to help you put more "punch" in your own advertising. Both complete ads and ad parts, along with a selection of radio spots, are available free of charge.

## Elephant Brand high analysis FERTILIZERS

11-48-0 13-39-0 16-20-0 23-23-0 24-20-0  
27-14-0 6-24-24 8-32-16 10-30-10

NITRAPRILLS (Ammonium Nitrate)

AMMONIUM SULPHATE

TRIPLE SUPER PHOSPHATE



**GET MORE FROM YOUR LAND WITH ELEPHANT BRAND**

EXCLUSIVE U.S. SALES AGENT FOR ELEPHANT BRAND FERTILIZERS: BALFOUR, GUTHRIE & CO. LIMITED - SAN FRANCISCO - LOS ANGELES - SEATTLE - PORTLAND - SPOKANE - MINNEAPOLIS



